pNjDŽβĭ‖ε hvyDŽFШ

hшĭβ€qŪε !Nj†y‖ENj qF⊤ł5Ůε hшĭ†l

hшĭʒβ⊤DŽ‖ENj hшĭ‖FDŽ‖ε !Nj†y‖ε !ƨ5

:FNJ⊣FĠ†ś⊣Nj !NJƨŮε qθENjY'Nj üNj€q⊣‖ε !ШΘ DžĭĠ hшĭlĭDŽFdžĭq‖ε l Fsűy‖ε

hшĭ‖FDŽ‖ε 5εβNjů‖ DžFDŽY hu⊤βNjĠ DžDŽ üĭ‖q

The Dynamic Relationships between Trading Volume, Stock Returns, and Volatility: Evidence from Amman Stock Exchange

:f ‖FU'‖ε q€qY'ə

ăβĭNjq‖ε ăqdžʒ qDŽΘDŽ q‖FQ‖

:YβNj⊣lq‖ε ɛεβlƋĠ

Ĭø⊤Ġβ‖ε qøĭ‖Nj Føød Žĭq

üNjŮε Ĭƨεβq‖ε ü⊤ƨ‖ε

čċČĎ-čċČč

العلاقات الديناميكية بين حجم التداول وعوائد الأسهم وتقلباتها: دليل من بورصة عمان للأوراق المالية

The Dynamic Relationships between Trading Volume, Stock Returns, and Volatility: Evidence from Amman Stock Exchange

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وأُجيزت بتاريخ / /٢٠١٣م.

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تاريخ مناقشة الأطروحة

٢٠١٣/١/١٣ م

ŏäÆøøøøøøøŁqä

بسم الله الرحمن الرحيم

"قل إعملوا فسيرى الله عملكم ورسوله والمؤمنون"

(صدق الله العظيم)

إلى من كلله الله بالهيبة والوقار .. إلى من علمني العطاء بدون انتظار .. إلى من أحمل أسمه بكل افتخار .. أرجو من الله أن يمد في عمرك لترى ثماراً قد حان قطافها بعد طول انتظار وستبقى كلماتك نجوم أهتدي بها اليوم وفي الغد وإلى الأبد.. والدي العزيز

إلى ملاكي في الحياة .. إلى معنى الحب وإلى معنى الحنان والتفاني .. إلى بسمة الحياة وسر الوجود إلى من كان دعائها سر نجاحي وحنانها بلسم جراحي إلى أغلى الحبايب ... أمي الحبيبة

بكل الحب.. إلى رفيقة دربي إلى من سارت معي نحو الحلم.. خطوة بخطوة بذرناه معاً.. وحصدناه معاً وسنبقى معاً.. بإذن الله .. ..زوجتي الغالية....

إلى اغلي ما في الوجود ... ريحانتي التي تفوح عطراً ابني ....محمد....

إلى القلوب الطاهرة الرقيقة والنفوس البريئة إلى رياحين حياتي .....إخواني وأخواتي.....

إلى الأخوة اللذين لم تلدهم أمي .. إلى من تحلو بالإخاء وتميزوا بالوفاء والعطاء إلى ينابيع الصدق الصافي ...

أصدقائي

الباحث
خالد الدويري

ǀ ƑĭǸŧѲǅǁǃ ƽǅǒəƑƷ

đĐ	Dĭnjʅǖƒ þƑƒĂƵĂ ýĂƒþķ!ƒ Dĭηơ LJŏħ Ŧŏŧŏdž ǤLjŏþ!ƒ Ŧþǚz!ƒ-Č
đĐ	Ǒ!Ǵơ!ƒ DĭĂŏ!ƒ ýĂƒþķ!ƒ DĭηơĂ LJŏdžĂŏ ýħp Ǵdž! ýĂƒþķ Dĭηơ LJŏħ Ŧŏŧŏdž ǤLjŏþ!ƒ Ŧþǚz!ƒ -D
đđ	Ǒ!Ǵơ!ƒ DĭĂŏ!ƒ ýĂƒþķ!ƒ DĭηơĂ ʂħǴʅ!ƒ DĭĂŏ!ƒ ýĂƒþķ Dĭηơ LJŏħ Ŧŏŧŏdž ǤLjŏþ!ƒ Ŧþǚz!ƒ -Ɣ
đđ	ʂħǴʅ!ƒ DĭĂŏ!ƒ Dĭnjʅƒ þƑƒĂƵĂ Ǒ!Ǵơ!ƒ DĭĂŏ!ƒ ýĂƒþķ Dĭηơ LJŏħ Ŧŏŧŏdž ǤLjŏþ!ƒ Ŧþǚz!ƒ -Ƙ
đđ	LJŏdžĂŏ ýħp Ǵdž! Dĭnjʅǖƒ þƑƒĂƵĂ Ǒ!Ǵơ!ƒ DĭĂŏ!ƒ ýĂƒþķ Dĭηơ LJŏħ Ŧŏŧŏdž ǤLjŏþ!ƒ Ŧþǚz!ƒ -ƚ
đĒ	ʂħǴʅ!ƒ DĭĂŏ!ƒ ýĂƒþķ DĭηơĂ Ǒ!Ǵơ!ƒ DĭĂŏ!ƒ Dĭnjʅ D þƑƒĂzLJŏħ Ŧŏŧŏdž ǤLjŏþ!ƒ Ŧþǚz!ƒ -Ɯ
đĒ	LJŏdžĂŏ ýħp Ǵdž! ýĂƒþķ!ƒ DĭηơĂ Ǒ!Ǵơ!ƒ DĭĂŏ!ƒ Dĭnjʅ D þƑƒĂƵ LJŏħ Ŧŏŧŏdž ǤLjŏþ!ƒ Ŧþǚz!ƒ -Ɵ
đē	ʂħǴʅ!ƒ DĭĂŏ!ƒ Dĭnjʅ D þƑƒĂƵĂ Ǒ!Ǵơ!ƒ DĭĂŏ!ƒ Dĭnjdžʅ D þƑƒĂƵ LJŏħ Ŧŏŧŏdž ǤLjŏþ!ƒ Ŧþǚz!ƒ -Ơ
đē	LJŏdžĂŏ ýħp Ǵdž Dĭnjʅ D þƑƒĂƵĂ Ǒ!Ǵơ!ƒ DĭĂŏ!ƒ Dĭnjʅ D þƑƒĂƵ LJŏħ Ŧŏŧŏdž ǤLjŏþ!ƒ Ŧþǚz!ƒ -þ
ĒĎ	Dĭnjʅǖƒ þƑƒĂƵ ƘǤħŏĭƖķĂ ýĂƒþķ!ƒ Dĭηơ LJŏħ Ŧŏŧŏdž ǤLjŏþ!ƒ Ŧþǚz!ƒ -Ď
ĒĎ	.ʂħǴʅ!ƒ DĭĂŏ!ƒ Dĭnjʅ D þƑƒĂƵ ƘǤħŏĭƖķĂ Ǒ!Ǵơ!ƒ DĭĂŏ!ǗĂƒþķ Dĭηơ LJŏħ Ŧŏŧŏdž ǤLjŏþ!ƒ Ŧþǚz!ƒ -D
ĒĎ	Ǵdž! Dĭnjʅǖƒ þƑƒĂƵ ƘǤħŏĭƖķĂ Ǒ!Ǵơ!ƒ DĭĂŏ!ƒ ýĂƒþķ Dĭηơ LJŏħ Ŧŏŧŏdž ǤLjŏþ!ƒ Ŧþǚz!ƒ -Ɣ LJŏdžĂŏħp
Ēď	DĭĂŏ!ƒ ýĂƒþķ DĭηơĂ Ǒ!Ǵơ!ƒ DĭĂŏ!ƒ Dĭnjʅ D þƑƒĂƵ ƘǤħŏĭƖķ LJŏħ Ŧŏŧŏdž ǤLjŏþ!ƒ Ŧþǚz!ƒ -Ƙ .ʂħǴʅ!ƒ
Ēď	ýħp Ǵdž! ýĂƒþķ DĭηơĂŏ!Ǵơ!ƒ DĭĂŏ!ƒ Dĭnjʅƒ þƑƒĂƵ ƘǤħŏĭƖķ LJŏħ Ŧŏŧŏdž ǤLjŏþ!ƒ Ŧþǚz!ƒ -ƚ LJŏdžĂŏ
ĒĐ	Dĭnjʅ D þƑƒĂƵ ƘǤħŏĭƖķĂ Ǒ!Ǵơ!ƒ DĭĂŏ!ƒ Dĭnjʅ D þƑƒĂƵ ƘǤħŏĭƖķ LJŏħ Ŧŏŧŏdž ǤLjŏþ!ƒ Ŧþǚz!ƒ -Ɯ ʂħǴʅ!ƒ DĭĂŏ!ƒ

ĒĐ	ýŀųp Ǵdž! Džnjdžʅ Đ þƑƒĂƵ ƘǴŀůŀŀķĂ Ŏ!Ǵơ!ƒ DžĂő!ƒ Džnjʅ Đ ƘǴŀůŀŀķ LJŏŀů Ŧŏŧŏdžǵļjŏþ!ƒ Ŧþǚƶ!ƒ -Ɵ LJŏdžĂő
ēċ	ŀƑĭƬ ŅjŧŀŀɛŅj ƛəƑŦdžŀŀɛ : Ƨ ơƑƨŀŀɛ üƬƻŀŀɛ
ēČ	ŊƑǴķļj!ƒ č-Ē
ēč	ăƧƤǕƒ ƘǴʅƒƧþ!ƒ ŊƑǴķļj ƴdž Ŧʅ ƒƧþ!ƒ ŊƑǴķļj ŦļjƧǴŀdž Ď-Ē
ēĎ	ƘǴőƮĂķ!ƒ ď-Ē
ēď	ƴŋƒƧdž!ƒ
ēĔ	ŦŏƨŏŀŋļjǗƒ Ʀŀ!Ǵŀů ƒ Ƥŀdž!ƒ

üNjƐƣƜǁƐ ƌDŽƏƑ5

ƌƟƧƬǁƐ	üNjƣƜǁƐ DžƐNjǆƳ	üNjƣƜǁƐ !5þ
ĎĐ	ƗǀƌƠƪ!ƒ ƘƠƪƒƧþ!ƒ ƒ Ƥǈǆ	č-ď
ďĚ	ƗǇǒzǈ! Ɨǒ5ƮĂ!ƒ ƘƒƇƠƮơŰƒ	č-đ
Đċ	ǅnjƪŰƒ þƑƒĂƵĂ ýĂƒþƙ!ƒ ǅƞơ LJǒƅ ǁƨƙTdž!ƒ ýdžƠǂƙ!ƒ ƨƓƙƤƒ	Ď-đ
ĐĎ	ǅnjƪŰƒ þƑƒĂƵ ƘƓǈǀƙĂ ýĂƒþƙ!ƒ ǅƞơ LJǒƅ ǁƨƙTdž!ƒ ýdžƠǂƙ!ƒ ƨƓƙƤƒ	ď-đ
Đē	ǅnjƪŰƒ þƑƒĂƵĂ ýĂƒþƙ!ƒ ǅƞơ LJǒƅ Ɨǒƅƅƪ!ƒ Ɨpŭz!ƒ	Đ-đ
đč	ǅnjƪŰƒ þƑƒĂƵ ƘƓǈǀƙĂ ýĂƒþƙ!ƒ ǅƞơ LJǒƅ Ɨǒƅƅƪ!ƒ Ɨpŭz!ƒ	đ-đ
Ēċ	ǅnjƪŰƒ þƑƒĂƵĂ ýĂƒþƙ!ƒ ǅƞơ LJǒƅ ƗǂǒdžƓǇǒþ!ƒ Ɨpŭz!ƒ	Ē-đ
ĒĒ	ǅnjƪŰƒ þƑƒĂƵ ƘƓǈǀƙĂ ýĂƒþƙ!ƒ ǅƞơ LJǒƅ ƗǂǒdžƓǇǒþ!ƒ Ɨpŭz!ƒ	ē-đ

[illegible]

[illegible]	[illegible]
Mixture of Distribution Hypothesis.	MDH
Sequential Arrival of Information Hypothesis.	SAIH
Vector Autoregression Model.	VAR
Generalized Autoregressive Conditional Heteroskedasticity.	GARCH
AutoRegressive Conditional Heteroskedasticity.	ARCH
Integrated Generalized Autoregressive Conditional Heteroskedasticity.	IGARCH
Exponential Generalized Autoregressive Conditional Heteroskedasticity.	EGARCH
The GARCH-in-mean.	GARCH-M
The Threshold GARCH.	TGARCH
.Mean Absolute Percentage Error	MAPE
.Mean Absolute Error	MAE
Diebold and Mariano Test.	MD
National Stock Exchange.	NSE
Dow Jones Industrial Average.	DJIA
Arab Monetary Fund.	AMF
Deutsche Borse Ag German Stock Index	DAX

hüĞþyll hu£+ljĞ ţ Ql+DŽll

:FNJHjĞ+sHNj !NJ2Ůε qə8NjYNj üNj£qHll !WΘ DžĬĞ huǐlĬDŽFđžĬqll l Fsúyll .ăqđž qDŽΘDŽ qlljFQl Ûăþĭ̈Njqll

huĬljFDŽll Ƽ£þNjůl DžFDŽY huTþNjĞ DžDŽ üĭlq

(ǏøTĞþll qøĭlNj Føø DŽĭq YþNj+lqll ε£þla) .čċČĎ .pNjDŽþĭll huyDŽFW Ûþĭ+2WFDŽ hulljzþ

þFfĂZ LJdž ů+Ă ýĂfþk!f Dženơ LJõhu Ho+ŏdžĞljõþ!f Hpůz!f ƧĞhukPŮ H l fƧþ!f ljRNj 2 þnjk

H ŏơ ÜHŏ!Ğdž!f s fƧĂū! LJĞdžZ H TƧĂh Õ5 HηƧþdž H+ƧT (đĐ) Dženj l Ů þFfĂz!f KĞhůlkĂ Dženj l Ūf

Ǐ!ϙ ĎČČĎ/č/č LJdž lƧks! HŏdžĂŏ!f s ů ε Úf ƧĞz l DĂ ýĂfþk!f DžĞηơD LJdž H l fƧþ!f KĞljĞõhu KljĂ+k

Hpůz ƧĞhukPŮ (Johnson Cointegration test)ƧĞhukPf DžfþPk l f Džk þpĂ ÜĎČčč/čĎ/ď̌č

ýĂfþk!f Dženơ LJõhu Hŏhhu l !f Hpůz!f ƧĞhukPŮĂ .Kfƨŏ ε kdž!f LJõhu ýηŪf H lŏĂƟ ‖ƧkTdž!f ýdžĞ+k!f

ĞdžD Ü(Granger Causality test) WRĂdžLj DžfþPk l f Džk þFfĂz!f KĞhůlkĂ Dženj l Ūf þFfĂZ LJdž ů+Ă

(Vector Error WRĂdžLj ǏlZ þĞdžkZŮf Džk þ15 ýηŪf lƧŏTp Ho+ŏdžĞljõþ!f Hpůz!f ƧĞhukPŮ

.(VEC) WRĂdžLjh 2 ĂƧzdž!f ĂD Correction Model)

Dženơ LJõhu HŏFĞTơϙ H!ŮþKfR ýηŪf H lŏĂƟ ‖ƧkTdž ýdžĞ+k Hpůz H l fƧþ!f KþηĂ

LJdž Dženj l Ūf þFfĂZ KĞhůlkĂ ýĂfþk!f Dženơ LJõhu Ă Hljõz!f KĞ+ƧT yõdžη! Dženj l Ūf þFfĂZĂ ýĂfþk!f

KfR Hŏhhu l Hpůz H l fƧþ!f KþηĂ Ğdž+ ÜH l fƧþ!f HljõZ KĞ+ƧT LJdž %ēĐ NJkhu l Lj Ğdž! ăƧPD Hnjη

LJdž %ēČ NJkhu l Lj Ğdž! ýĂfþk!f Dženơ Ǐ!ϙ Dženj l Ūf þFfĂZ LJdž Nηkk ljĞηkŮf HŏþĞơD HŏFĞTơϙ H!Ůþ

þFfĂZ KĞhůlkĂ ýĂfþk!f Dženơ LJõhu Hŏhhu l !f Hpůzů! Ğơư fĂ ů+T þηk Dž! ĞnjLjD Ůϙ ÜHljõz!f Dženơ

.Dženj l Ūf

KfR ýηŪf Ƨŏ Tp Hŏhůl Ho+ŏdžĞljõþ Hpůz þĂηĂ ǏlZ ĞŏĂp ů ŏ!þ H l fƧþ!f NJFĞkLj KƧnjUD

Ǐ!ϙ H5Ğư ÚĞh ÜKĞ+ƧT!f yõdžη! s hĞl !f ýĂfþk!f DženơĂ Õ!Ğơ!f ýĂfþk!f Dženơ LJõhu HŏFĞTơϙ H!Ůþ

Ɨš!Ǵơ!ƒĂ ƗIJǴ]!ƒ DžnjlŰƒ ÞƑƒĂŽ ЌǴJlk LJdž ý+ LJšu Ɨšlď] ýηŰƒ lSšŢp Ɨš+šdžǴLjšÞ ƗpǔŽ ÞĂηĂ

.ƗLjšž!ƒ Džηơ LJdž %đē NJkl]Lj Ǵdž!

ÞƑƒĂŽ LJšu ýηŰƒ lSšŢp Ɨš+šdžǴLjšÞ ƗpǔŽ ÞĂηĂ ǏĺŽ ẅš!þ Ɨ]ƒSÞ!ƒ Þηk Dž! Ǵdž+

DžÞŽĂ Ü ƗIJǴ]!ƒ Džnj]Ű ÞƑƒĂŽĂ Š!Ǵơ!ƒ ýĂƒÞk!ƒ Džηơ LJšuĂ sJǴ]!ƒ ýĂƒÞk!ƒ DžnơĂ Ɨš!Ǵơ!ƒ Džnj]Ű

ƗIJǴ]!ƒ Džnj]Ű ÞƑƒĂŽĂ Ɨš!Ǵơ!ƒ Džnj]Ű ÞƑƒĂŽ LJdž ǔ+ LJšu ýηŰƒ lSšŢp Ɨš+šdžǴLjšÞ ƗpǔŽ ÞĂηĂ

ÞƑƒĂz!ƒ ЌǴJlkĂ Š!Ǵơ!ƒ ýĂƒÞk!ƒ Džηơ LJšuĂ Ɨš!Ǵơ!ƒ ÞƑƒĂz!ƒ ЌǴJlkĂ sJǴ]!ƒ ýĂƒÞk!ƒ Džηơ LJšuĂ

.ƗIJǴ]!ƒ

ЌǴJlk ÜDžnj]Ű ÞƑƒĂŽ ÜýĂƒÞk!ƒ Džηơ ÜƗš!Ǵdž!ƒ sƒSĂū! LJǴdžŽ Ɨ]SĂh :huïΘƑƗ2DŽIIε l ƒDŽ+IIIε

.Džnj]Ű ÞƑƒĂŽ

üǋǰǛǫ üƬƻǁǫ

ƕƨǫƥǫǂǁ !ƑƴǁǫƥƑƱǛǫ

.ƕǄǮǫƾǄǮǁǫ Č-Č

.ƕƨǫƥǫǁǫ ƕǂǀ ƪǄǮ č-Č

.ƕƨǫƥǫǁǫ ƹǫǫǉǈ Ď-Č

.ƕƨǫƥǫǁǫ ƕǐǄǮǉǈ ď-Č

. ǀƑǐƮƥƻǁǫ Đ-Č

.ƑǊƚǐǇǊǆǄǮǌ ƕƨǫƥǫǁǫ ǀƑǆƑǐǴ đ-Č

.ƕƨǫƥǫǁǫ üǀǐǉ Ē-Č

üNjŬɛ üTƻǁɛ

ƕƨɛþɋǂǁ !ƑƴǁɛþƑƯŰɛ

:ƕDŽɋʂDŽǁɛ Č-Č

ýĂƒþķ!ƒ LJĜǂ ǂőơ ÜLJőSTƺ!ƒ LJSl!ƒ ĸĜőǉőƛŰƛ ýƑƒĂD ŖǉdžDžnjʅŰĜƕ ýĂƒþķ!ƒ LJþSŰƒ ƻSƵ

(31 DžpS LJĂǉĜl!ƒ SĂþȚ Ĭķơ ÜǂƱĜʅĂ!ƒ ĸĜǂST ƯƺƕǂƱʅƒĂƕDžƯǉdž SőƸ ʂĂʅ ýǚP LJdž Džķő

ǂőŖő5ǉķĂ ǂőƕĜpS ǂnjȠǂĂ DžƯǉdž ʂĂʅǂ Ő!Ĝdž!ƒ LJĜdžƵ ʂĂʅ Ʃőʅdķ NJƕȠĂdžƕ Džķ ĬŖ!ƒ 1976 ǂǉʅ!)

.(ĎČČĒ ƔőƱ P!ƒ) þơƒĂ LJć Ő5

ĬŖ!ƒ ĸĜǉőƺʅķ!ƒ þlƵ ƻ ȚķǉdžĬķơ LJőSdžƛķʅdž!ƒ ĸĜȠĜőķơƒ ŐƕǉőŐ!Ĝdž!ƒ LJĜdžƵ ʂĂʅ ýƯ

Ő5 ǂő!Ĝdž!ƒ ʂƒSĂŰƒ LJĂǉĜp SþȚ LJD Ĭ!ƍ Ü ǂő!Ĝdž!ƒ ʂƒSĂŰƒ ǂƵĜǉȚ Ő5 ƖSőƕǂ ĸŬĂơķ þnjTő Dþƕ

Ő!Ĝdž!ƒ LJĜdžƵ ʂĂʅ! ŐǉĂǉĜp ƻǁPǂ ǂő!Ĝdž!ƒ ʂƒSĂŰƒ ǂƑőNj ČĜTǉƍ NJƕȠĂdžƕ DžķĂ Ü 1997 DžĜƵ LJþSŰƒ

.(ĎČČĒ ƔőƱ P!ƒ) ǂƕĜpS!ƒĂ ƻƒSTŰƒĂ ƴőSTķ!ƒ ĸĜőǁdžƵ Ĭ!Ăķķ Őķ!ƒ ǂnjȠ!ƒ ĸơƕȚDĂ

ǂʅʅƋdžǂ ǂő!Ĝdž!ƒ ʂƒSĂŰƒ LJĂǉĜp ƔȠĂdžƕ 1999 SƒŖć 11 Ő5 LJƋdžƵ ǂȚSĂƕ ĸƑTǉŨĂ

DžĜől!ƒ ĜnjőƖƍ ýǂĂDĂ Ü ƠƕS!ƒ Ĭ!ƍ ƻþnjķ ŬĂ Ü ƒ ĜP!ƒ ƳĜƱl!ƒ ýƕp LJdž SƒþķĂ Ü Ĝþ!ĜdžĂ ĜþSƒþƍ ǂǁlķʅdž

.ǂő!Ĝdž!ƒ ʂƒSĂŰƒ ǂƑőNj ǂƕĜpS ĸơķ LJþSŰƒ Ő5 ǂő!Ĝdž!ƒ ʂƒSĂŰƒ ýĂƒþķ! DžƯǉdž ʂĂʅǂ ĬŖő5ǉķ!ƒ SĂþ!Ĝƕ

ýƕp LJdž Sƒþķ ǂǁlķʅdž ǂʅʅƋdžǂ LJĂǉĜl!ƒ ƔȠĂdžƕ ǂő!Ĝdž!ƒ ʂƒSĂŰƒ Ƴƒþőƍ ƨǂSdž ƐTǉD Ĝdžǂ

Ĭǁ Ƶ ƻƒSTŰƒĂ ǂő!Ĝdž!ƒ ʂƒSĂŰƒ ǂőǂǁdž! LJődžŰƒ Ư5ơ!Ĝƕ Ĝnj! ƟSȚdž ƖþőơĂ ǂnjȠǂĂ ƒ ĜP!ƒ ƳĜƱl!ƒ

.(ĎČČĒ ƔőƱ P!ƒ) ƒ Ĝlķ!ƒĂ ǂőĂʅķ!ƒ ĸĜőǁdžƵ

ýĜȠdž Ő5 ǂődž!Ĝƺ!ƒ ǂődžőƯǉķ!ƒĂ ǂőǉlķ!ƒ ĸƒSĂƱķǁ! ǂƕǂƒĂdž LJĜdžƵ ǂȚSĂƕ ĸǁƯĂ

NSC ùƕ ƻĂSƺdž!ƒ ŐǉĂSķǂ!Űƒ ýĂƒþķ! DžĜƯǉ ýĜPþƍ Džķ ĎČČě DžĜƵ Ő5 NJǉƒ ǂőơ ÜĸĜȚSĂƕ!ƒ

Ő5 ýĂƒþķ!ƒ ĸĜőǁdžƵ SőĂƱķ! Őķdķ ýĂƒþķ!ƒ DžĜƯǉ LJdž ƖþőþȠ!ƒ ǂPʅǉ!ƒ LJƋƕ SǂŖőĂ V900

10 Ă 5% LJŏh ĜdŽ ΘĂfSkŏ Ŧ!ĂfþkdŽ!f Ŧŏ!ĜdŽ!f ŦpSĂ! ŎdŽĂŏ!f SzĮ!f Sŏʒk ăþdŽ! NJh ΘĂdŽĮdŽ ţ dŽĜnj!

ŦƑTĜLj!f ĜnjLjdŽ ŦŢĜP ŦŏhSz!f ƘĜŢSĂh!f þĜdŽkƵǕ ýȠSŏ ŦŏƒfĂTz!f SĜzĮǕf ƘĜŦSơ LJD Ǖǫ Ǖ%

ýpD ŦȠSþhĂ ǕDnjĮǕf LJdŽ þŏsdŽ!f SfþŢǫĂ ǕƯĂSl!f ýƛdŽ ŦŏȠSĜP!f SþĜŢdŽ!f LJdŽ ýŏĂdŽk!f ĬƵ

ŦŏpĂĮ!f ŦdŽŏl!f Ŏ5 Ɣlk!f lþơ lþĜŏs Ĭ!ǫ ĭþƋŏ LJD NJLjƋT LJdŽ ĜdŽ ĂNjĂ ǕlsȠkơdŽ!f ΘĜhSǕf ĬƵ

DnjȠĂSP ĂD ƫĂĮ!f Dnj!ĂPþ þLjƵ ƔLjĜȠǕf LJŏSdŽƛkĮdŽ!f ƻĂĜPdŽ Sŏƛŏ ĜdŽ ĂNjĂ ǕNJkŏơhS Ŏ5Ă DnjĮ!

.ĜnjLjdŽ

LJdŽ Sŏƛŧ! ĜƵĂưĂdŽ ŦpǕz!f ljŖnj ýzȠ ĜdŽdŽ ýĂfþk!f DȠơh SƛƋkkĂ SƛƋk ƘĜh!k!f ljŖnjĂ

Ĝnjŏ5 ýĂĜLjk (čĕĒď) DĜƵ (Granger) ù! ŦĮfSþ ǁĜLjNj ŧŏơ ýŏĂƱ LJdŽs ŖLjdŽ Ŧŏ!ĜdŽ!f ŧĜơhǕf

ŧĜơhǕf ljŖnj! Sŏhŧ!f þþz!f LJdŽ DʑS!f ĬƵĂ ýĂfþk!f DȠơĂ DnjĮǕf SĜzĮǕ ƫƱdŽ!f Sŏʒk!f

ŦlŏpþĂ ŦơưfĂ ŦpǕƵ Ĭ!ǫ fĂŢĂkŏ D! LJĂƛơĜh!f LJD Ǖǫ ǕĜnjŏƵ ƘŏSȠD Ŏk!f ƫfĂĮǕf þþzkĂ

.ŦpǕz!f ljŖnj!

ǕƘĜdŽĂzdŽ!f ƫ5þk ƫŏSƱ LJƵ SƛƋkk ýĂfþk!f DȠơĂ DnjĮǕf ƫĂĮ Ŏ5 ƘĜh!k!Ĝ5

LJŏ!ĂfþkdŽ!f LJŏh ýƵĜ5k!f ŦŏŧŏdŽĜLjŏþ LJƵ Shzŏ NJLjǕ Ɣƛŧ LJƵ ýĂfþk!f Dȯơ LJĂhpfSŏ LJĂ!ĂfþkdŽ!fĂ

ĈĂư Ŏ5 ƫĂĮ!f Ŏ5 Ưzh!f Dnjưzh ydŽ LJĂƵĜ5kŏ LJŏŖ!f LJŏzƱdŽ!f SŏʑĂ LJŏzƱdŽ!f

Shkzŏ ŧŏơ ŦŏpĂĮ!f SĜzĮǕf LJŏŏzk ƻĜƱdŽ!f ŦŏĜnjLj Ŏ5Ă ǕDnjjh ŦŢĜP!f ýĂfþk!f ƘĜŏȠŏkfSkĮf

.SĜzĮǕf ýƱzŏ ĂD ƱTLjŏ NJLjǕ Ŧŏ!ĜdŽ!f ƫfĂĮǕf Ŏ5 DNjǕf ŦdŽĂzdŽ!f ýĂfþk!f DȠơ

ĜnjdŽƲzdŽ LJĜŧ þl5 YĂưĂdŽ!f fŖNj ĬƵ ƘŏSȠD Ŏk!f ƘĜĮfSþ!f lSƛŧ LJdŽ DʑS!f ĬƵĂ

Sþl!Ĝh ŦŏhSz!f ĜnjLjdŽĂ ŦƑTĜLj!f Ŧŏ!ĜdŽ!f ƫfĂĮǕf ĬƲơk D!Ă ŦdŽþlkdŽ!f Ŧŏ!ĜdŽ!f ƫfĂĮǕf Ŏ5 Dkŏ

Ʊŏ!Įk! ŦĮfSþ!f ljŖnj ƘĈĜȠĂ ǕĜnjŏ5 ŦpǕz!f ljŖnj ŦzŏhƱ ĬƵ ƻSzk! ƘĜĮfSþ!f ljŖnj LJdŽ Ŏ5Ĝŧ!f

ƨǒƛǂ!ƒ ĎǐǴdžǩNjƒ LJdž Nǁu ǏUơk Ǵdž! Ǆǒ!Ǵdž!ƒ ƽƒƨĂū! LJǴdžƵ ǂŢƨĂu Ǒ5 Ǆpǔƶ!ƒ ljŖNj ǏǀƵ CĂư!ƒ

.ƳLjǴŋŰƒĂ LJǒǒǀơdž!ƒ LJǒƨdžƛkɭdž!ƒ LJdž

.ǴnjkǴǒư25Ă Ǵnjkǒdžnjɒ Ăɭƒƨþ!ƒ 2ƒþNjŰ Ư ƨƵ ǑǀǒǴdžǒ5Ă

:hʊƨɛβɋǁɛ hʊǂlɭDž č-Č

:Ǆǒ!Ǵk!ƒ ǂǀFɭŰƒ LJƵ ǂuǴŋÚƒ Ǒ5 Ăɭƒƨþ!ƒ ǂǀƚTdž ýλdžkk

þùƑƒĂƵ ǨǴùhǀlkĂ ĎinjɭŰƒ þƑƒĂƵ LJdž ý‡Ă ýĂƒþk!ƒ Ďiŋơ LJǒu Ǆpǔƶ!ƒ ý‡T ĂNj Ǵdž .č

ÞĎinjɭŰƒ

þùƑƒĂƵ ǨǴùhǀlkĂ ĎinjùɭŰƒ þƑƒĂƵ LJdž ý‡Ă ýĂƒþk!ƒ Ďiŋơ LJǒu Ǆpǔƶ!ƒ ljǴŋkƒ ĂNj Ǵdž .Ď

ÞĎinjɭŰƒ

:hʊƨɛβɋǁɛ ɛɋljc Ď-Č

:Ǆǒ!Ǵk!ƒ 2ƒþNjŰƒ ƽǒlơk! Ăɭƒƨþ!ƒ ljŖNj ǨCǴŋ βl!

þùƑƒĂƵ ǨǴùhǀlkĂ ĎinjùɭŰƒ þƑƒĂƵ LJdž ý‡Ă ýĂƒþk!ƒ Ďiŋơ LJǒu Ǆǒ‡ǒdžǴljǒþ!ƒ ǨǴpǔƶ!ƒ ƨǴhkPƒ .č

.ĎinjɭŰƒ

.ĎinjɭŰƒ þƑƒĂƵĂ ýĂƒþk!ƒ Ďiŋơ LJǒu Ǆpǔƶ!ƒ ý‡T ǏǀƵ 2ƨzk!ƒ .Ď

.ĎinjɭŰƒ þƑƒĂƵ ǨGhǀlkĂ ýĂƒþk!ƒ Ďiŋơ LJǒu Ǆpǔƶ!ƒ ý‡T ǏǀƵ 2ƨzk!ƒ .ď

LJùdž lƨùkɜǀ! Ǆǒ!Ǵdž!ƒ ƽƒƨĂū! LJǴdžƵ ǂŢƨĂu Ǒ5 Ǆŋƨþdž!ƒ ǄdžǴƶ!ƒ ǄdžNjǴɭdž!ƒ ǨǴ‡ƨT! ǁ!ŖĂ

.ƨǒƛdk!ƒ ƒŖNj ăþdžĂ ƨPŰƒ ǏǀƵ GdžnjLjdž ý‡ ƨǒƛdk LJGǒuĂ ÜĎČčč/čĎ/ď č Ǐ!ǫ ĎČČĎ/č/č

:ƕƨƐþƣǁƐ ƕĭĎŽǉǆ ď-Č

ǑùǊ ǴùǌķǴǉǁľķĂ þƑƒĂƶ!ƒĂ ýĂƒþķ!ƒ Ďǌƞơ ǇǑƕ ƗƥǗƶ!ƒ Ďǌǉ5 ǇĐ Ǉǆž ƗƪƒƧþ!ƒ ǉŖǊ ƗǒǆžǊĐ ƴƕǉķ

ŀƧǒƮùƥ ƘǴùƶƥĂķ ƴưĂ Ǒ5 þƵǴƪǒ ƗƥǗƶ!ƒ ǉŖǊ Ďǌǉ5 ǇƒĂ ÜƗǒ!Ǵǆž!ƒ ƽƒĂƪǕƒ Ďǌǉ5! ƗǒƒþƕƜ!ƒ ƗƱǁǉ

.ýĂƒþķ!ƒ ƘǴǒƞǒķƒƧķƪƒĂ ÜƧǴƶƪǖ! ýƞǕƒ

ǇǑùǆž ƗùǒǴǆž!ƒ ƽƒƧĂǖ! ǇǴǆžƵ ƗƮƧĂƕ ǋƕ ĬƱơķ Ǵǆž! ƗǆžǌǆžƧƕķƶķ ƗƪƒƧþ!ƒ ǉŖǊ ǇĐ Ǵǆžƚ

Ƨùǒƺ ƗǆžǊǴƪùǆž ƗƕƪùǉƘƷǁƕ Ɨǒơ) ǇǑǒǉþƧǕƒ ƧǒƺĂ ǇǑǒǉþƧǕƒ ǇǑƧǆžĂķƪǆž!ƒ Ǉǆž ƧǒƛƗ!ƒ ĎǴǆžķǊƒ

(%đč,ď) Ǒ!ƒĂùơ 2011 ĎǴƵ ƗǒǴǌǉ Ǒ5 ǇǴǆžƵ ƗƮƧĂƕ Ǒ5 ƗƞƧþǆž!ƒ ƘǴƗƧƬ!ƒ Ǒ5 ǇǑǒǉþƧǕƒ

ƗǆžǊǴƪùǆž ƘǁƗƬ ǇǑơ Ǒ5 Ü(33.7%) ƔƧƶ!ƒ ƗǆžǊǴƪǆž ƘǁƗƬ Ɨǒơ ÜƗǒƥĂƪ!ƒ Ɨǆžǒǀ!ƒ Ǒ!Ǵǆžƞǫ Ǉǆž

.(ĎČČĒ ƔǒƱƤ!ƒ) ƗƮƧĂƕǁ! ƗǒƥĂƪ!ƒ Ɨǆžǒǀ!ƒ Ǒ!Ǵǆžƞǫ Ǉǆž (%čē,Ē) ƔƧƶ!ƒ Ƨǒƺ

:ǀƑĭƮþƧǁƐ Đ-Č

ǑùǊĂ ƗùƪƒƧþ!ƒ ǉŖǊ ƻƒþǊĐ ƽǒǀơķ! ƘƧĂƱ ƘǴǒưƧ5 Ɨķƪ ĬǁƵ ƗƪƒƧþ!ƒ ǉŖǊ ƘƨƗƧķ

:Ǒǁǒ Ǵǆžƚ

þùƑƒĂƵĂ ýĂƒþùķ!ƒ Ďùƞơ ǇǑùƕ ƗǒƑǴƮơǫ Ɨ!Ǘþ ƘƒŖ ýƞǕƒ ƗǁǒĂƱ ýǆžǴƗķ ƗƥǗƵ ǁǴǉǊ .č

.ĎǌǉƪǕƒ

ƘǴùƕǁľķ Ă ýĂƒþùķ!ƒ Ďùƞơ ǇǑƕ ƗǒƑǴƮơǫ Ɨ!Ǘþ ƘƒŖ ýƞǕƒ ƗǁǒĂƱ ýǆžǴƗķ ƗƥǗƵ ǁǴǉǊ .Ď

.ĎǌǉƪǕƒ þƑƒĂƵ

.ĎǌǉƪǕƒ þƑƒĂƵĂ ýĂƒþķ!ƒ Ďƞơ ǇǑƕ ƗǒƑǴƮơǫ Ɨ!Ǘþ ƘƒŖ ƗǒƕƕƪƗƥǗƵ ǁǴǉǊ .ď

:Ɨǒ!Ǵķ!ƒ ƗǒƵƧ5!ƒ ƘǴǒưƧ5!ƒ ǴǉǇǆž ƳƧ5ķǒĂ

.Dĭnjʅ Ǖƒ ϸƑƒĂƵ Ĭ!ǫ ýĂƒϸƙ!ƒ Dĭηơ LJdž NJηƙƙ ŧŏƑĜƮơǫ Ŧ!Ǚϸ ƘƒƦ Ŧŏhhʅ ŧpűƵ ǁĢǉǋ -D

.ýĂƒϸƙ!ƒ Dĭηơ Ĭ!ǫ Dĭnjʅ Ǖƒ ϸƑƒĂƵ LJdž NJηƙƙ ŧŏƑĜƮơǫ Ŧ!Ǚϸ ƘƒƦ Ŧŏhhʅ ŧpűƵ ǁĢǉǋ -Ɣ

.Dĭnjʅ Ǖƒ ϸƑƒĂƵ ƘĜhǚlƙĂ ýĂƒϸƙ!ƒ Dĭηơ LJŏh ŧŏƑĜƮơǫ Ŧ!Ǚϸ ƘƒƦ Ŧŏhhʅ ŧpűƵ ǁĢǉǋ .Ð

:Ŧŏ!Ģƙ!ƒ ŧŏƵƧƽ!ƒ ƘĜŏư Ƨƽ!ƒ ĜnjǈdžYƧƽƙŏĂ

ϸùƑƒĂƵ ƘĜhǚlƙ Ĭ!ǫ ýĂƒϸƙ!ƒ Dĭηơ LJdž NJηƙƙ ŧŏƑĜƮơǫ Ŧ!Ǚϸ ƘƒƦ Ŧŏhhʅ ŧpűƵ ǁĢǉǋ -D

.Dĭnjʅ Ǖƒ

Dĭùηơ Ĭù!ǫ Dĭnjʅ Ǖƒ ϸƑƒĂƵ ƘĜhǚlƙ LJdž NJηƙƙ ŧŏƑĜƮơǫ Ŧ!Ǚϸ ƘƒƦ Ŧŏhhʅ ŧpűƵ ǁĢǉǋ -Ɣ

.ýĂƒϸƙ!ƒ

ϸùƑƒĂƵĂ ýĂƒϸùƙ!ƒ Dĭηơ LJŏh ŧŏƑĜƮơǫ Ŧ!Ǚϸ ƘƒƦ ýηǕƒ lƧŏƮp ŧŏŧŏdžĜǉŏϸ ŧpűƵ ǁĢǉǋ .đ

.Dĭnjʅ Ǖƒ

:Ŧŏ!Ģƙ!ƒ ŧŏƵƧƽ!ƒ ƘĜŏư Ƨƽ!ƒ ĜnjǈdžYƧƽƙŏĂ

Ǒ!Ĝơ!ƒ ýĂƒϸƙ!ƒ Dĭηơ LJŏh ŧŏƑĜƮơǫ Ŧ!Ǚϸ ƘƒƦ ýηǕƒ lƧŏƮp ŧŏŧŏdžĜǉŏϸ ŧpűƵ ǁĢǉǋ -D

.ƪhĜʅ!ƒ ýĂƒϸƙ!ƒ DĭηơĂ

Ǒ!Ĝơ!ƒ ýĂƒϸƙ!ƒ Dĭηơ LJŏh ŧŏƑĜƮơǫ Ŧ!Ǚϸ ƘƒƦ ýηǕƒ lƧŏƮp ŧŏŧŏdžĜǉŏϸ ŧpűƵ ǁĢǉǋ -Ɣ

.ŧlhĜʅ!ƒ Dĭnjʅ Ǖƒ ϸƑƒĂƵĂ

ŧŏ!Ĝơ!ƒ Dĭnjʅ Ǖƒ ϸƑƒĂƵ LJŏh ŧŏƑĜƮơǫ Ŧ!Ǚϸ ƘƒƦ ýηǕƒ lƧŏƮp ŧŏŧŏdžĜǉŏϸ ŧpűƵ ǁĢǉǋ -Ƙ

.ƪhĜʅ!ƒ ýĂƒϸƙ!ƒ DĭηơĂ

ŧŏ!Ĝơ!ƒ Dĭnjʅ Ǖƒ ϸƑƒĂƵ LJŏh ŧŏƑĜƮơǫ Ŧ!Ǚϸ ƘƒƦ ýηǕƒ lƧŏƮp ŧŏŧŏdžĜǉŏϸ ŧpűƵ ǁĢǉǋ - ŀ

.ŧlhĜʅ!ƒ Dĭnjʅ Ǖƒ ϸƑƒĂƵĂ

:ƛƨƐƥƣǁƐ ü|ĭǉ Ē-Č

ƧǴƱŰƒ ýƛdžŏ ĭŖ!ƒĂ ýĂǕƒ ýƮ5!ƒ Ĭ!ǫ ƗƼǴƯŰǴƛ ýĂƮ5 ƗƪdžƤ LJdž ƗƪƒƧƥ!ƒ ljŖNj LJĂǂƙƙ

ǴùdžljŏƛÜƗ|ƛǴƪù!ƒ ƘǴùƪƒƧƥ!ƒĂ ƗƪƒƧƥǁ! ĭƧƱlj!ƒ ƧǴƱŰƒ Džƥ|ŏ! Ŏljǵƛ!ƒ ýƮ5!ƒ ƇǴƞ ÜƗƪƒƧƥǁ! Džǵƶ!ƒ

ÜƘǴŏùƯƨ5!ƒ ƧǴƛƙƤƒĂ ƘǴljǴŏƛ!ƒ ýŏǁơƙ! yƛƒƧ!ƒ ýƮ5!ƒĂ ÜƗƪƒƧƥ!ƒ ƗŏƞnjljǆLJƛŏ! ƇǴƞ Ɨ!ǵƛ!ƒ ýƮ5!ƒ

.ƘǴŏƮĂƙ!ƒĂ ǊƑǴƙlj!ƒ LJŏƛŏ ĭŖ!ƒĂ ƩdžǴƤ!ƒ ĂNjĂ ƧŏƤǕƒ ýƮ5!ƒĂ

Ĭ ďǰƑƙǁƐ üƬ ƶǁƐ

ă ƥƲ ǉǁƐ ƥƑƯ Ȫ Ɛ

.ƕƊǅơȿǅǁƐ Č - č

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.!ǊƨŬƐ ơƏƐǋƳ Ď - č

.üǋƐơƗǁƐ !ƜƟ ď - č

.ơƏƐǋƴǁƐ ƒƚƭƚ Đ - č

.üǋƐơƗǁƐ !ƜƟǋ !ǊƨŬƐ ƥƑƴƨ ǅ ǅĭƓ ƕƌǘƴǁƐ đ - č

Ǐ ǵƑƙ ü T ƨ

ă ƥ ư ǵ ƥ ƑƯǗ

:ƕƉŽơʂƊŽ Č - č

Ɗžηơ ƊŽĂnjʂdž ⱣƑƈưÚƈƕ ƈnjkǒdžNjƊĂ ƈnjkƋTLjĂ ƈnjdžĂnjʂdž ⱡǒơ LJdž ⱡȚƧĂƕ!f ýȚʂ!f fⱤNj ýĂƈLjkǒ ƨĂȴ ƊžùηơĂ Ɗmjùȴ Ǘf ƧƈzùȴƊ LJǒùƕ ⱡpǔz!f ⱪȴƨƥ Ǒk!f ⱪƈǒƧULj!f ƊŽʎ LJdžĂ ƥƑfÅz!f Ɣ ǵ ⱪĂ ýĂfƥk!f .ýĂfƥk!f

:ƕȚƥNjƈǵ ƕǏƊŽljƈ č - č

ƈùƵfƧⱤ Ƨƕkƶk ⱪƈȚƧĂƕ!ƈʂ ÜýĂƥǵ! ǐ ƥƈȚkpǗf ĂdžLj!f Ǒʂ fƧǒƕ⁺ fƧĂƥ ⱪƈȚƧĂƕ!f ǐ ƥƋk ⱡùǒdžNjƊ ýùdžηLj LJƊ LJù⁺džǒĂ ÜƧƈdžʎkùȴǗf lƥƈǒƨĂ ýfĂdžǗf Ɣ ǵη! ⱡȚƧʂ!f Oǒkǒ ǔlkȴdž ƈǒƥƈȚkpf :ⱡǒ!ƈk!f ƱƈLj!f Ǒʂ ⱡȚƧĂƕ!f

.č ⱪfƧPƥùdž!f NjùǒηĂkĂ Üⱡǒ!ƈdž!f ʂfƧĂǗf Ǒʂ ƧƈdžʎkȴǗf yǒηTk ʂǒƧƱ LJƵ ƧƈPƥǗf ⱡǒdžLjk ƧƈùPƥǗf lƥƈƵ ⱡǒdžLjk ǏǴƵ ⱡǒ!ƈdž!f ʂfƧĂǗf ʂĂȴ yηTk ⱡǒơ ÜǑLjƱĂ!f ƥƈȚkpǗf ⱡdžƥP! yǒƧƈTùdžƕ Dƈƈùǒl!f LJĂzǒƱkȴǒ Ǔ LJǒƧPƥdž!f ƧƈƹȚ! ⱡƕȴLj!ƈƕ ⱡȚƈP Ü ǐ ƧƈdžʎkȴǗf ÜƊmj!fĂùdžƊ Ƨƥpp ǏǴƵ ⱡǒ!ƈdž ʂfƧĂƊ CfƧT LJĂǴưsǒ DmjLj35 DŽʎ LJdžĂ ÜⱡǴǴl!f Dmj!fĂdžƕƕ ⱡǴkȴdž ǏùǴƵ ƥƵƈȴùk ƈnjLjƊ ƈdž⁺ ÜDŽPưk!f LJdž ƥơ!fĂ ⱡǒdžLjk!f Ưfƨƹ ⱡdžƥP ǏǴƵ ƥƵƈȴǒ fⱤNjĂ ƈl5Ă ǁ!ⱤĂ (ⱪfƥLjȴ!f ĂƊ DmjȴǗf Ǒʂ CfĂȴ) ⱡdžFǔdž!f ⱪfƧƈdžʎkȴǗf Åơlj ⱪfƧPƥdž!f NjǒηĂk .ƧƈzȴǗf ⱪƈNjƈηkǓ

ⱪƈùƒʂ!f Ǐù!ǫ (LJǒưƧldž!f) Ưƒƈʂ ƈnjöƥ! Ǒk!f ⱪƈƒʂ!f LJdž ýfĂdžǗf ýǒÅơk Ǒʂ lƥƵƈȴdž!f .Ď ⱡǒ⁺ǔnjkùȴǓf Dmjkƈùlʂlj Ưǒʂƕkƕ LJĂdžĂlǒ LJĂưƧldž!ƈʂ Ü(LJǒưƧkldž!f) ƨηƵ ƈnjöƥ! Ǒk!f ǁùǴk ʂƈlơkȴf ýƈηƈ ýĂǴơ ƥljƵ ýƕlkȴdž!f Ǒʂ ǏǴƵƊ ýĂPƥ ǏǴƵ ýĂȚơ!f ýƕƈldž ⱡǒ!ƈơ!f CfƧùT Ǒùʂ ⱡùưƧkldž!f ýfÅùdžǗf ǁǴk DžfƥPkȴƕ LJĂưƧkldž!f DŽĂlǒ ƈdžƥljƵĂ Ü ƯĂƧl!f ăĂkȴùdž lƥƈùǒƨ Ǒ!ƈk!ƕĂ ÜǏǴƵƊ ǗĂPƥ LJĂηkljǒ Ƨ Ăȴ DmjLj35 ÜƜƈkljǗf ƧȚƈljƵ ƧǒηdkĂ . yƉžkηdž!f ⱪƈF5 ý⁺! ýƕ ÝLJǒưƧkldžǴ! ƟlƵ Σǒ! ⱡTǒƶdž!f

- čĎ -

.(Market Makers) (Noninformational Traders) (Noninformational Traders) (Noninformational) (Heterogeneous Investors) Campbell et,al (1993) (Noninformational) (Market Makers) Campbell et,al (1993)

Łùþǘż!ƒ Ƙùʅƨþ Ŏk!ƒ ƘǴʅƒƨþ!ƒ ĎǛżďž ǇǏ Nishat and Mustafa (2008) ǇĴŏǉ Ǵďž‡

ƘǴǉǃǀk!Ǵǉ ƱǉkƧďž Ďǌʅǃ! Ŏ!Ǵż!ƒ ýĂƒþk!ƒ Ďǌơ ǇǏ ƘþɳĂ Ďǌʅ Ǖƒ þƑƒĂƵ ƘǴǉǃǀkĂ ýĂƒþk!ƒ Ďǌơ ǇĴŏǉ

.ýĂƒþk!ƒ ĎɳơĂ Ďǌʅ Ǖƒ þƑƒĂƵ ǇĴŏǉ ŁŏǉǴɳŏƒ Łþǘƶ ǁǴǇǋ ǇĴƒĂ

: üǋǫƣǀǁɛ !ШΘ ď-č

.Łŏǉďžƨ ǀƨk5 Ŏ5 Ǵnj!Ăƒþk Ďǉk Ŏk!ƒ yǃʅ!ƒ ĂǏ Ďǌʅ Ǖƒ ăĂkʅďžĂ Ďǌơ Σŏǀŏ ýĂƒþk!ƒ Ďǌơ

ǀƨùk5 Ŏ5 Ǵnj!Ăƒþk Ďǉk Ŏk!ƒ (yǃʅ!ƒ ƘƒþơĂ ĂǏ Ďǌʅ Ǖƒ) ƘƒþơĂ!ƒ þþƵĂ Ďǌơǉ ΣǴǀŏ ǀþǴƵĂ

ýĂƒþk!ƒ Ďǌơ ΣǴǀŏ ǇǏ Ǉ‡ďžŏĂ . ǁ!Ʀ Ʃŏƺ ĂǏ ƒƨǌT ĂǏ ǴƵĂǉʅǏ ĂǏ ǴďžĂŏ ƘǇǴ‡ ƇƒĂʅ ǀþþơďž Łŏǉďžƨ

ĂǏ ǴďžĂŏ Łǉŏżďž ǀƨk5 ýǘƤ Ďǌʅ!ƒ ƒƦǌ ĂǏ Łżǃʅ!ƒ ǉƦǌ ǏǁƵ ýĂƒþk!ƒ ŁďžŏǀǇ Ďǌʅ Ǖƒ ĂǏ yǃʅ!ƒ Ưżǉ!

.(www.ahmednasr.net) ǁ!Ʀ Ʃŏƺ ĂǏ ƒƨǌT ĂǏ ǴƵĂǉʅǏ

ýǘùƤ ǇĴùďž Ďǌʅ Ǖƒ ƨǴżʅǏ ŁżǉǴkďž ĂǏ Łƽŏơƪ!ƒ Ŏ5 Ŏ!Ǵďž!ƒ Ďʅǃ!ƒ ƨďžĂkʅďž!ƒ ǏƨǀŏǴďžþǉƵ

Ďǌʅù!ƒ ƨżùʅ ǏǁƵ ƳǘƱǕƒ þżǉ5 ýɳżǉ ǋŏǁƵ ƨďžŏ ĂǏ ýĂƒþk!ƒ Ďǌơ ýǋǴɳkŏ ǀþǴż!Ǵǉ ÜƘǉƨkǉǕƒ

þƑƒĂż!ƒ ĂǏ þƑǴż!ƒ Ǐ!ǫ ƨżʅ!ƒ Łǉʅǉ Ǐ!ǫ ƨďžĂkʅďž!ƒ ƨǛǉŏ þþ ÜŁŏʅǴʅǏ ŁŏďžǋǏ ƒƦ ǀþǴż!Ǵǉ ǇĂ‡ŏ ǐƦ!ƒĂ

.ýĂƒþk!ƒ Ďǌơ Ǐ!ǫ ƨǛǉ!ƒ ýǉþ ŁŏƤŏƨǴk!ƒ

ŁùŏďžǋǏ ƒƦ ǋǉƒ Ǖǫ ǇĴŏƨďžĂkʅďž!ƒ Ǉďž Ʃŏƛ‡!ƒ ýǉþ Ǉďž ýĂƒþk!ƒ Ďǌơ ýǋǴɳk Ǉďž Ďƺƨ!ƒ ǏǁƵ

:Ŏkďŏ Ǵďžŏ5 ǋkŏďžǋǏ ƒ ƤǁkkĂ þƑƒĂż!ƒĂ ƨżʅ!Ǵǉ ǋkþǘƵ ýǘƤ Ǉďž ǀƨŏǉ‡

.ƨǴżʅǕǴǉ ƋǉǇk!ƒ Ŏ5 Ďǌǉďž ýďžǴƵ ýĂƒþk!ƒ Ďǌơ ƨǉkżŏ .č

ýĂƒþk!ƒ Ďǌơ ǇǏ Łŏơ ÜŁǉŏżďž Łŏǉďžƨ ǀƨk5 ýǘƤ Ǵnjŏ‡!Ǵďž ƨŏƺk Ŏk!ƒ Ďǌʅ Ǖƒ Łŏďž‡ Σŏǀŏ Ăǌ5

ǇƵ ǀƨ5Ăkďž!ƒ þŏþɳ!ƒ ƘǴďžĂǁżďž!ƒ ɣʅơ ĎĂŏ ý‡ ɣǀkŏ ǇǏ Ǉ‡ďžďž!ƒ Ǉďž Łŏ!Ǵďž ŁþƨĂ ǏǁƵ

Łŏþǉż!ƒ ΘǴƨǕƒ ǇǘƵǫ ĂǏ ŎɜơƬ ǇǴŏǉ ƘǴďžĂǁżďž!ƒ ǉƦǌ ǇĂ‡k ǇǏ Ǉ‡ďžďž!ƒ Ǉďž5 .Ł‡ƨT!ƒ

ŎƑǴư þ Ď‡ơ ýǉďž ƨƤǏ ƵƨƱ Ǉďž ŁďžĂǁżďž!ƒ ǇĂ‡k ǇǏ Ǉ‡ďžďž!ƒ Ǉďž ĂǏ Ł‡ƨT!ƒ Ǵnjďžþǀk Ŏk!ƒ

.Ł‡ƨT!Ǵǉ ŁƱǉkƨďž!ƒ ŁŏďžǛǉk!ƒ ŁƑŏnj!ƒ ýǘƤ Ǉďž ĂǏ

Ŏ5 Ďǌʅ ēÜđĚČÜČČČ Ăǌ Ǵnj!Ăƒþk Ďǌơ Ʊʅ Ăkďž ƨþ!ǴǉĂþ‡Ǵďž Ł‡ƨT ýǴƛďž!ƒ ýŏǉʅ ǀǃż5

ƒƦǌ .ŁżþĂkďž!ƒ ΘǴƨǕƒ ƨƒþǀďž Ư5Ƥkʅ ǴnjǇǏ ƘǇǃƵǏ ĎČČĎ/čĎ/čē Ŏ5 ÜþơƒĂ!ƒ ĎĂŏ!ƒ

ŁǉʅǇǉ ƨżʅ!ƒ Ŏ5 ƯǴ5ƤǇƒĂ ĎĂŏ!ƒ ǁ!Ʀ Ŏ5 Ďǌʅ ďđÜčēČÜČČČ ýĂƒþk ǐ!ǫ ăþǏ ƨǉƤ!ƒ

.%Ě

.ŀďžĂǁžďž!ƒ ƧŏĮ5ķ Ŏ5 ýĂƒþķ!ƒ Ďžŋơ ŀŏďžŊǰĎ .Ď

.ǀþŏþŋ!ƒ ĸǴďžĂǁžďž!ƒ ýĂŢĂ ƴďž ƻ ǔP!ƒ þĂŋĂ ăþďž þŏþơķ Ŏ5 ŀďžnjďž ǉƒþĎ ĂNj ýĂƒþķ!ƒ Ďžŋơ

ƧŏǮùķ ĭĎ Ŋù! ǇǴù‡ ƒĂĮ ŀďžĂǁžďž ŊǇƒ ĬǁƵ Ŋ5ŢĂ Ǉ‡ďžŏ ǇŏƧďžǮķĮďž!ƒ ýƵǴ5ķ ƔhĮŏ ŎT ĭĎ

.Ǔ ĎžĎ ŀ‡ƧT!ƒ Ďžŏŏǀķ ĬǁƵ ĭƧNjĂŋ

.ŎžŏhƱ!ƒ Ƨŏƹ ýĂƒþķ!ƒ ĎžŋơĂ þƑƒĂƶ!ƒ Ǉŏh ŎǁĮǁĮķ!ƒ ƱǴhķƧǓƒ .ď

ǀþǴùƶ!Ǵh ŎžŏhƱ Ƨŏƹ ýĂƒþķ!ƒ Ďžŋơ ǴnjŏƼ ǇĂ‡ŏ Ŏķ!ƒ ĸƒƧķ5!ƒ ǇĎ (Morse, čĕĔČ) ŊķǉķĮƒ

.ƽĂĮù!ƒ Ŏ5 ǀþŏþŋ Ƨŏƹ ĸǴďžĂǁžďž þĂŋĂ ǁ!Ʀ Ŏ5 ƔhĮ!ƒĂ ǗƧƶĮ!ƒ Ŏ5 ŎhǴŋŏƒ Ƨŏƺķ ǴnjƶhķŏŎ

ǇĂùďžĂǀŏ ĎžnjǉďùƼ ŀŢǴP ĸǴďžĂǁžďž ǇŏƧďžǮķĮďž!ƒ Ưƶh ăþ! ǇǴ‡ ƒƦ ƒ ĂŢP!ƒ ŊŋĂ ĬǁƵ

ǇǓĂ ǗŀùďžǴƵ ŀùďžĂǁžďž!ƒ ĸơhŢĎ ƒƦ ĎžnjĮ!ƒ ŀďžŏþ ƧƶĮ!ƒ Ʃ‡ƶŏ ĬķơƧŏh‡ ý‡Th ýĂƒþķ!Ǵh

ǉǴùŋķǓƒ ƩǉǉhƧƶĮ!ƒ ǁƧơķ Ươǖǉ ǴǉǉƼ5 þŏþŋ!ƒ ƧƶĮǁ! ǁƧơķ! ĸþĂ ƽƧƺķĮŏ þþ ƧƶĮ!ƒ

.ĎžǴƱĎ ǀþƶ!

:ǫǝƐŊǰǁƐ ƒ‡ƽŀ Đ- č

ǀþþùơďž ŀŏǉďžƨ ǀƧķ5 ýǔP Ďžnj Į!ƒ ƒƦnj! þƑǴƶ!ƒ ƱĮĂķďž ǇƵ Ďžnj Į!ƒ þƑǴƵ ƻƒƧơǉƒ ăþďž ĂNj

ǇǴŏhķ!ƒ ýǔP ǇĎž ĂĎ (Standard Deviation) ĭƧǴŏƶďž!ƒ ƻƒƧơǉǓƒ ýǔP ǇĎž ŊĮǴŏþ Ďžķŏ ŀŏơ

.ŊĮ5ǉ ƧTƋďž!ƒ ĂĎ Ďžnj Į!ƒ þƑĂƵ Ǉŏh (Variance)

ŀùþƧĂ!ƒ ǉƦnj Ŏ5 ƧǴďžǮķĮǓƒ ǀƧĂƱP ăþďž ŀǉŏƶďž ŀŏ!Ǵďž ŀþƧĂ! þƑĂƶ!ƒ ƔǁǁķýǮďžŏ ŀŏơ

ƧǴďžǮķĮǓƒ ǀƧĂƱP ĸþƒƨ (ǴnjƱĮĂķďž ǇƵ þƑĂƶ!ƒ ƻƒƧơǉƒ) þƑĂƶ!ƒ ƔǁǁķƧƒþǀďž þƒƨ ǴďžǁǂƼ5 ŀŏ!Ǵďž!ƒ

ǇǴ‡ ǅƒĂĮ ƧďžǮķĮďž!ƒ ŀŏƵĂǉ Ĭ!ǫ þďžķƶŏ ĭƧǴďžǮķĮǓƒ ƧƒƧ!!ƒ ǇǴ5 ŀ!Ǵơ!ƒ ǉƦnj Ŏ5Ă ǗŀþƧĂ!ƒ ǉƦnj Ŏ5

.ƧƱǴPďž!ƒ ƔǉŋķŏĂĎ ý Ư5ŏ

ŀǴơhǕƒ ĸǉŏh ŀŏơ .ƽƒĂĮǖ! ŎǁhǀķĮďž!ƒ ǁĂǁĮ!ƒ ĬǁƵ ŀďžnjďž ĸǕǕþ ƧǴƶĮǕƒ Ɣǁǁķ! Ǉǫ

ǃƧŏǮ‡ Ǘ(ŀŏhǁĮ ĎžĎ ŀŏhǴŋŏǫ ĸǴ‡ƧơķĸǉǴ‡ ǇƒĂĮ) ƧǴƶĮǖ! ŀďžPư!ƒ ŀŏþǴŏķƵǓƒ Ƨŏƹ ĸǴ‡Ƨơķ!ƒ ǇĎ

ŊķǉķŎķ!ƒ ǁĂ‡T! ƽƒĂĮǕƒ þŏþhķ þǉƵ ŀǉǮ!ƒ ǇĂƧďžǮķĮďž!ƒ ƔĮķ‡ŏĂ .ǃŏhĮǉ ŀŏ!ǴƵ þƑĂƵ ǴnjhǀƶŏǴďž

ƔǴ5ķƧǴh ǀƧďžǀķĮďž!ƒ ƧǴƶĮǕƒ ĸǴďžþŢ ƧƦǉķ Ǘǁ!Ʀ Ĭ!ǫ ŀ5Ǵư ǓǴhĂ ǗƧǴƶĮǖ! Ĭ!ĂǕƒ ŀďžþŢ!ƒ ǇƵ

ƧĂƧďž ƴďž ĎžþǴ5ķ!ƒ Ĭ!ǫ ýŏďžķ ĸǴhǁǁķ!ƒ ǉƦnj ǇĎ ĭĎ ǗƔŏƧ!ƒ ăþďž!ƒ ĬǁƵ ƧǴƶĮǕƒ ƔǁǁķĸǓþƶďž

ǇƼ5 ǗƽĂĮ!ƒ ƧǴƶĮĎ Ɣǁǁķ ǅþh þƵĂďž ƴþĂķ ǇƵ ǇĂƧďžǮķĮďž!ƒ ƨŋƶŏ ǴďžþǉƵ ĬķơƼ5 ǁ!Ʀ!Ă .ĸþĂ!ƒ

(www.alqabas.com) ĸþĂ!ƒ Ưƶh! ǴnjƧƒƧďžǮķĮƒ ƒĂƶþĂķŏ ǇĎ ǗƧƴƶĮǕƒ ĸǴhǁǁķ Ďþhķ Ǉŏơ ǗĎžnjǉǴ‡ďžƼh

:ŏ‴ŏ ĝdž ĝnjŀjdž Ƨ‡Ŗj þFfĂz!f ƘĜhw‴lk Ĭ‴Ƶ Ƨλđk LJD LJ‡džŏ ýdžfĂƵ lþƵ ‖ĜŀjNjĂ Ŏ5 LJĜdžnjŀŏ LJfŖ‴!f lþFĜs!f ƧĜƶŀDĂ ⅄Ffƨư!f ýλdž Üþ‴h!Gh ⱢŢĜP!f ⱢŏþĜŢkpŰf ýdžfĂz!f .č ‖Ljh!f þþơŏ LJfþ‴h!f LJdž þŏþz!f Ŏ5 ýĜλdž!f ýŏhŀ Ĭ‴ƶ5 Ü⅄‴lk!f Ŏ!Ĝk!GhĂ ѕĂŀ!f ljĜɳkf Ƨŏŏƹk ⅄hŀŏ LJf LJ‡džŏ ĭŖ!fĂ Ü‖Ăŀjh!f LJdž Ư ƒƧkpů! lþFĜs!f Ƨƶŀ ĜNjĜơưĂ ⱢŏTƵ Ŏ5 ĭƨ‡Ƨdž!f .ĜŀjĜŏơD ⱢsŏŀjƵ LJĂ‡k Ⱡŏ!Ĝdž!f ѕfĂŀŰf Ŏ5 ýƶ5 lþƧ

Ⱡŏơ ÜNfkGh‴lkĂ DžnjŀŰf ѕĂŀ Ĭ‴Ƶ ýŏĂƠ!f ăþdž!f Ŏ5 Ƨλđŏ DžPưk!f ƘĜNjĜɳkf Ŏ5 Ƨŏƹk!f .Ď LJĂ‡ŏ Ŏk!f ⱢŏþĜŢkpŰf ƘfƧks!f yđž ѕ5fĂk‴! ýŏdžk (P/E) þFĜƶ‴! Ƨƶŀ!f ⅄ŀj yŀĂk LJD .ⱢưsPŀjdž ƘGh‴lk NɳfĂŏ Ă YĜskƧŭ! ýŏdžŏ ѕĂŀ!f LJD Ⱡŏơ ÜƧlkŀdž ĂD Ư sPŀjdž Ĝnjõ5 DžPưk!f Ⱡhŀj YĜskƧGh ⱢƠhkƧdž LJĂ‡k (P/E) þFĜƶ‴! Ƨƶŀ!f Ⱡhŀj Ư Ĝ5Pŀjf LJĜ5 ăƧPD ƘfƧk5 Ŏ5 LJ‡! ⱢnjɳfĂdžĂ DžnjŀŰf ѕĂŀ Ư Ĝ5Pŀjf Ĭ!ϱ ĭþđŏ fŖNjĂ ÜƧlkŀdž Ƨŏƹ Ƨƶŀ!f Ⱡŏơ DžPưk!f .ƘGh‴lk!f

ýŏhŀ Ĭ‴ƶ5 .Ⱡŏ!Ĝdž!f ѕfƧĂŰf ѕĂŀ ⅄‴lk ⅄hŀŏ LJD ⱢƵĜŀjŢ!f ƘĜƵĜƠp LJdž YĜƠl! LJ‡džŏ .ď ĭþđk LJD LJ‡džŏ Ơsŀj!f ШĜkŀjÚ Ⱡdžnjdž Ⱡl‹ŀjdž Ŏ5 ⱢŏPĜŀjdž Ⱡs ŢĜƵ LJĜ5 Ơsŀj!f YĜƠp Ŏ5 ÜýĜkdž!f LJD LJŏơ Ŏ5 .ŀjĂŖơ ĂŖơkŀ Ơsŀj!Gh ⱢƠhkƧdž!ƒ ƘĜ‡ƧT!f Džnjŀ LJĜ5 Ŏ!Ĝk!GhĂ ÜƠsŀj!f ƧĜƶŀ ƨsp ⅄‴lk!f fŖNj LJĜ5 Ŏ!Ĝk!GhĂ .LJĂƧƨư kŏ LJĂƧPŰf LJD Ůƹ YĜskƧŰf fŖNj LJdž LJĂþŏskŀŏ Ư ƶh!f

ⱢŏþƧs!f DžnjŀŰf Ĭ‴Ƶ Ƨλđŏ Ĝdž‡ DžĜƵ ý‡Th ѕĂŀ!f Ĭ‴Ƶ Ƨλđŏ ƧĜƶŀŰf Ŏ5 . (www.investopedia.com)

ɑɘƐNjy‴lƐ l ƑĜ‡ѕⱢNj üNj£ɑⱢ‴lƐ !ⅢƟNj !NJƨŮƐ ɑɘƐNjY DžĭĜ hʊsűy‴lƐ đ-č

DžnjùŀŰf ƧĜƶŀđ5 ÜƧĜƶŀŰf Σ Ĝŀd Ĭ‴Ƶ Ơl5 ƧƧlkk Ů Ⱡŏ!Ĝdž!f ѕfĂŀŰf Ŏ5 ƘĜ‡Ƨơk!f LJɳ

Ŏù5 ƘùhGĂ!f LJùdžĂ ѕĂŀ!f ƠĜTj ýĂơ Ⱡưdžĝ£ ƘĜdžĂ‴ƶdž ŎƠƶk ýĂfþk!f Džɳơh ĜnjƠhƧ LJĂþh LJùdž ĜùNjƧŏ£Ă lþùŏþɳ!f ƘĜùdžĂ‴ƶdž!fĂ ýĂfþk!f Džɳơh ĜnjƠhƧ þljƵ DžnjŀŰf ƧĜƶŀD LJD ƘGŏhpŰf .ýhlkŀdž!f Ŏ5 ƧĜƶŀŰf N‹ŏ!ɳ Nɳkkŀ Ĝdž Ĭ!ϱ ⱢŏĜnjLj!Gh GljþĂlk ƘfƧŏ£kdž!f

ƧĂƠk Ĝnjõ‴Ƶ þdžkƶŏ Ŏk!fĂ DžnjŀŰf ѕfĂŀŰ Ⱡŏŀŏfƨ!f lþdžZŰf ĜdžNj ýĂfþk!f DžɳơĂ þFfĂz!G5

ýŢùk Ŏùk!f lþŏþɳ!f ƘĜdžĂ‴ƶdž‴! Džŏŏlk ĜnjLjdh þFfĂz!f ƨŏŀ5k LJ‡džŏ Ⱡŏơ ÜĜnjkưnjLjĂ ѕfĂŀŰf ljŖNj ljŖùNj ýĂùơ LJŏƧdžλkŀùdž!f Ƨ ŭkùPf Ĭ ù‴Ƶ ƨùTđdž LJƵ lƨGhƵ ýĂfþk!f DžɳơĂ ÜѕĂŀ!f Ĭ!ϱ

.Mahajan (2008)ƘĜdžĂ‴ƶdž!f

[illegible]

[illegible]

[illegible]

[illegible] .(...)

[illegible]

[illegible]:

[illegible] (Mixture of Distribution Hypothesis) [illegible]

.Clark (1973) [illegible] (MDH) [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] Luu and Martens (2002) [illegible]

[illegible] (MDH) [illegible]

[illegible] (MDH) [illegible] (Luu and Martens) [illegible]

[illegible] Andersen et, al. (2000) [illegible]

[illegible]

ù! ƘƒƧǴƙƤǕƒ ǈǆ ƥƥƵ ǇƒƧƞ ƥǉƵǍ Ü{ƥƬƧ!ƒǍ ƗƱơǖǆ! ƗǅǤ ƘǴǃƙƙ!ƒ ǑƬƙ ƗǒƱơ!ƒ

ǀƧǒǴǯǆ ǊǦǴƙǉ ǑƱƶƙ ƗǒǆǍǒ!ƒ ƥǦƒǍƶ!ƒ ƴǵƧǆ Ǐ ƵƗǒǉǆ!ƒ ƘǴƪƒƧƥ!ƒ ǊǦǴƙǉ ƴǂ ǈǄ ƥƞǍ (MDH)

((Luu and Martens ǎƧǒ ƗǒǴǌǉ!ƒ ǑǮǍ ÜƗǒƱơ!ƒ ƘǴǉǴǒ!ƒ Ǐ Ƶ ƗǒǉǆƵ!ƒ ƘǴǃƙ!ƒ ǄƒƥƤƙƪƒ ƥǉƵ

ǄƒƥƤƙƪƒ Ǐ!ǫ ǴǒǦƨƞ ǎƨƶǒ ǀƥǍƞǍǆ!ƒ ƘǴǒǃƥǕƒ Ǒǵ (MDH) ù!ƒ ƘƒƧǴƙƤƒ ǊǦǴƙǉ Ǒǵ ǈǒǴǃƙ!ƒ ǈǄ

.ƘǴǃƙƙ! ƗǮǒƶư Ʃ ǒǒǴǀǆ

(Sequential Arrival of Information ǑƶǃǴƙƙ!ƒ ƘǴǆǍǃƶǆ!ƒ ƴǍƬǍ ƗǒưƧǮ Ď-Ē-Ď

.Copeland (1976) ù! (SAIH) ùǃ ƗǮǍƧƶǆ!ƒ ǍǄ (Hypothesis

ƘƒƧǒƺƙ! ƗǀƱǆ!ƒ ǄǒǀǑ!ƒ ǈǑǃ ǉǴƞƙǕƒ ƗǒǦǴǉǍ ƗǒǃǴƞǒǫ ƗǒǃǃƬ ƗǜǖƵ ƥǍƞǍ ƯƧƙǮ ǑǊǉǍ

.ƴǍƒƥƙ!ƒ ǄǴƞơǄǍ ƧǴƶƬǕƒ

Ǐ!ǫ ƴƬƙ ǕǍ ǑƶǃǴƙƙ ƴǂƬǃ ƫǍƬ!ƒ Ǐ!ǫ ƴƬƙ ƘǴǆǍǃƶǆ!ƒ ǈǴǮ ƗǒưƧǮ!ƒ ǉǞǊ ƔƞǍǆǃǍ

ǄƞơǴǊǃơǴƬǒ ƗƶǃǴƙƙǆ ǈƨƒǍƙ ƱǴǀǉ ǀƥƵ ƗƥơǒǁǓƱ Ǐ ǏƵ ǅǴǉǃǍ ƥơƒǍ ƘƤǍǃ ǈǒƧǆǍƙǆ!ƒ ǴǒǆƞƘ

ƗǮǴǂ! ƘǴǆǍǃƶǆ!ƒ ƴǍƬǍ ƥǉƵ ǁǁǍ ƗǒǦǴǉǉ!ƒ ǈƨƒǍƙ!ƒ ƗƱǀǉ Ǐ!ǫ ƴǍƬǍ!ƒ ǄǒǙǒ ǏƙơǴƵ ƴǍƒƥƙ

.(ĎČČĒ ÜǈǍƧƤǎǍ ǐƥǒǃƨ!ƒ) ƫǍƬ!ƒ ǑǮ ǈǒƧǆƙƬǆ!ƒ

ƗǒơMahajan and Singh (2008) ǕǁǍǆǉ!ƒ ƒǁǉ Ƙ!ǍǴǉǙ Ǒƙ!ƒ ƘǴƬƒƧƥ!ƒ ǈǑǃ ǈǆǍ

ǴǃǤ ǈǆ ƴǍƒƥƙ!ƒ ƔǃƬǃ ǒƬǉ ƴǍƒƥƙ!ƒ ǄƞơǍ ƘǴǃƙƙ!ƒ ǈǑǃ ƗǒǴƞǒǒ ƗƤǗƵ ǁǴǉ ǈǄ ƗƬƒƧƥ!ƒ ƘƥƞǍ

ƥǉƵ ƱǀǮ ǈǍ!ǍƒƥƙǑ ǈǒƵǀƱǆ!ƒ ƧǴƞƙ!ƒ ǈǄ ƗǒơǃÜƫƒǍƬǕƒ Ǐ ƵƧƙǀƙ ǑƙǁǍ ǈǒƵǀƱǆ!ƒ ƧǴƞƙ!ƒ

ƘǴǆǍǃƶǆ ƥǍƞǍǃ ƫǍƬ!ƒ Ǐ!ǫ Ɨ!ǴƬƧ ǴǆơƙǉǍǃ ǈǴǮ ƒǁǉǃǍ ǄǉǃǍ ƗƬǴƤ ƘǴǆǍǃƶǆ ƴǍƬǍ

ǴǒƞǒƧƥƙ ƴǍƒƥƙ!ƒ ǄƞơǍ ǀƥǴǒƨ Ǐ!ǫ ǐƥƙǒ ǴǆƶǍ ǴǉǍƬǴƬ Ǐ Ƶ ƴǍƒƥƙ!Ǵǃ ǈǒƧǆƙƬǆ!ƒ ǑƤǴǃ ǄǍǀǒ ǀǒƥƞ

.ǄǉǍƬ!ƒ ƧƶƬ Ǐ Ƶ ƧǒƙǁƙǕƒ ƗǒǴǉǉƙǴǃǍ

De Long et, al. (1990) (Noise Trading) ЈNŽɐdž!ƒ ýdžĜzkdž!ƒ ШRĂdžlj ď-Ē-Ď ÜŁǒþĜŢkpƒ Σ ļD ĬЇZ þLjkļk Ů CĜưĂư!ƒ ƧĜηk ЌĜƱĜTlj LJD ŁǒƧULj!ƒ ljRNj ƯƧk5kĂ ljRNjĂ ÜƧǒŢl!ƒ ăþdž!ƒ ĬЇZ Dınjļ Ūƒ ƧĜzļD Ǒ5 Łkpđdž Ƨǒzļk CĂļ Ł!Ĝơ ŁĂþơ Ĭ!ş ĭþđǒ ĜdždžDınjļ Ūƒ þJƒĂŽ ƱļĂkdž Ǒ5 yηƒƧk ĜnjLjŽ ĜTljǒ Ă ýǒĂƱ!ƒ ăþdž!ƒ ĬЇZ Ǒ5kPk Łǒơ Łkpđdž Łǒ!Ĝơ!ƒ .(ĎČČĚ LJĂƧPcĂ ĭþöwɐ!ƒ) ýĂƒþk!ƒ DĹĜηơD Ǒ5 Ƨǒʒk Ǒ!Ĝk!ĜwĂ ýĂƒþk!ƒ Dınơ Ĭ!ş Dınjļ Ūƒ þJƒĂŽ LJdž Nηkk ŁǒwĜηǒŰƒ Łǒwwļ!ƒ Łpŭz!ƒ ШRĂdžlj!ƒ ƒRNj Ǒ5Ă ĬЇZ Dınjkƒƨƒƨp þLjkļk Ǒk!ƒ CĜưĂư!ƒ ƧĜηk! ŁǒwĜηǒŰƒ lƧĜηk!ƒ ýz5 þĂþƨ yđž ѕļkk ǑNjĂ Ĭ!ş ýĂƒþk!ƒ Dınơ LJdž Nηkk Łǒwwļ ŁǒwĜηǒƒ Łpŭ Ĝư ǒD ЇĜljNjĂ ÜŁlwĜļ!ƒ ƧĜzļŪƒ ЌĜŧƨơk ЌŭdžĜzk! Łηǒklj ǑNj ƧĜzļŪƒ Ǒ5 Ќƒƨǒʒk!ƒ Ylwļ LJD Łǒưƨ5 yđž ѕ5kk ǑNjĂ ƧĜzļŪƒ Ќƒƨǒʒk .CĜưĂư!ƒ ƧĜηk

CĜưĂư!ƒ ƧĜηk De Long et, al. (1989, 1990,1991) ЌĜļƒƨþ Ќ!ĂĜljk þl5 Dınjǒþ! LJD ĺwR‡ LJĂþlkzǒ) LJǒR!ƒ ЇƑŮĂD DınjljdwCĜưĂư!ƒ ƧĜηk ƒĂ5ЇZ DınjLjD Łǒơ yļĂdž ý‡Tw lƧǒŢp DınjpĜ5D CĜưĂư!ƒ ƧĜηk LJD ĜdžwĂ (ýwlkļdž!ƒ Ǒ5 ƧĜzļŪƒ LJZ ŁŢĜP ЌĜdžĂĬzdž .LJĂǒljŭlz!ƒ ƧĜηk!ƒ GnjzpĂkǒ LJD LJ‡džǒ ŭ5 ŁƑƱĜP DınjkƒƨĂŢkĂ YĬηǒ CĜưĂư!ƒ ƧĜηk ЇĂĬļw dwljk!ƒ ĬЇZ lƧþl!ƒ DĭþZ LJd5 Ư ƒƧk5Ůƒ ƒRnj! ĺƧULjĂ GnjƱļĂkdž Ĭ!ş þĂzk LJ! CĜưĂư!ƒ ƧĜηk Ќƒþlkzdž LJD ĂNj ƧƱP!ƒĂ Üѕ Ăļĭ! Ł5ĜưƍƧƱĜPdž .CĜLjĂŪƒ ljRNj Ǒ5 Ĝ5ƧƱk ƧλŧD OwŢk LJD LJ‡džǒĂ ŁĬǒĂƱ lƧk5! ƨƒƧlkļGw Łǒljŭlz!ƒ ЌĜzpĂk!ƒ LJĂ‡k Ĝdžþljž) ŁǒơwƧĬ! ŁŽɐŽɐdž!ƒ ЌĜzpĂkĬ! ýĜλdž‡Ă ƧĜdžλkļƒ ĂD ýŭʒkļƒ ƒ ŢPdž ý‡Tw De Long et, al. (1990) ƒĂļƧþ þl5 .(ƧĜzļŪƒ ƧĜηk þĂηĂ yđžĂ ŁdžĜk Łļ5GljdžĜ þĜŢkpƒ Ǒ5 NUjƒ LJǒwkĂ ÜCĜưĂư!ƒ ƧĜηk! ŁƑƱĜP!ƒ DžǒNjĜ5dž!ƒ

[illegible] (Risk-Averse) [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] (Tax-and Non-Tax Motives,) [illegible]
.Lakonishok and Smidt (1989)

[illegible]

(Hiemstra and Jones 1994) [illegible]

[illegible] Bremer and Kato (1996) [illegible]

[illegible] (abnormal)

ƗŏǴnjĿj) ƧƒƦƈ ƧnjT ǁ!Ʀ Ŏ5 ǴdžƄ ƗǻdžǴƗ Ɨŏ!Ǵdž!ƒ lƧƙ5!ƒ ýĂƱ ĬǻƵ (significantly positive)

.lƧƪǴP!ƒ ƘǴƗƧT ǻ! ǴƄ!Ǵƪ LJǴƗ NJLjƒĂ (ƗŏLjǴƄǴŏ!ƒ ƘǴƗƧT!ƒ ĎǓƶdž! Ɨŏ!Ǵdž!ƒ ƗLjƪ!ƒ

ýƥƶdž Ĭǻ Ƶ ƻŏƶư ƧŏƛƌƘ Ǵnj! Ɨŏ!ǴdžƪƊƧ!ƒ ƟǴƄƧŰƒ Ĭǻ Ƶ ƔƑƒƧư!ƒ LJƊ ǁ!ƦƄ ƒĂƞƘLjƘƪƒĂ

lƧƱŏƪ!ƒ ƯƧ5! ýĂƒƥƘ!ƒ ƭƑǴlơ ƻŏƧơƘ! lƧƞǴƘdž ƴ5ƒĂƥ ǁǴLjNj LJƒĂ ÜLJǴƄǴŏ!ƒ Ŏ5 ĎnjƪŰƒ LJƒƧĂƥ

.ƧǴƞƘ!ƒ Ƙǚdž Ǵƶƙ Ĭǻ Ƶ

[illegible]

[illegible] **:Darwish (2011)** [illegible] (GARCH) [illegible]

[illegible] (Day-of-The [illegible] .Week Effect)

[illegible] .(Noise Trading) [illegible]

[illegible] **:Boubaker and Makram (2011)** [illegible]

[illegible] (GARCH) [illegible] (SIAH) [illegible] (MDH) [illegible]

[illegible] (GARCH) [illegible]

[illegible].

[illegible]

[illegible]

.(MDH) [illegible]

:Abd El Aal et, al. (2011) [illegible].

[illegible].

[illegible]:

1- Exponentially Weighted Moving Average (EWMA).
2- Autoregressive Conditional Heteroscedastic (ARHC).
3- Generalization Autoregressive Conditional Heteroscedatic (GARCH).
4- Asymmetric GARCH models.

[illegible] (GARCH) [illegible]

[illegible]

[illegible]:

A- The Glosten, Jagannathan, and Runkle Model.
B- The EGARCH Model.

[illegible]

[illegible] (HFI,CIBC100,EGX30)

[illegible] (EGARH) [illegible]

[illegible] (MAPE, RMSN, MAE) [illegible]

[illegible] Diebold and Mariano Test (MD) [illegible]

[illegible].

:Tripathy (2010) .ď

ǤnjƙǤhǕǀƙĂ Ďǌnjʅǜƒ ƥƑƒĂƵĂ ýĂƒƥƙ!ƒ Ďǌɳơ ǇǛǚ Ɨǒǚǒƨɳƙ!ƒ Ɨƿǚƶ!ƒ Ɨʅƒƨƥ!ƒ ǉǨǋ ƘƨǚƙƤƒ

GARCH, EGARCH, PGARCH,) ƜƦǤǆǉ ǄƒƥƤƙʅǤǚ Ɨǒ!Ǥǆ!ƒ ƽƒƨĂǖ! ƥǉnj!ƒ ƽĂʅ!

ĂĐ ǁ Ʈ (ďČ) ù! ǑǆǆĂǒ!ƒ ƽǚƺǗƒ ƨƶʅ ǇƵ ǀƨǤǚƵ ƘǤǉǤǒǚ!ƒ ƘǉǤƚĂ Ǘ(TARCH, ARCH

.ĎČčČ/č Ǐ!ƍ ĎČČđ/č ǇǆǆǇ ǀƨƙƽǕ! ýĂƒƥƙ!ƒ ĎǌɳơĂ (scripts) ƥǀƵ

ƨǤǚƤǕƒ ǇƒĂ ǗýĂƒƥƙ!ƒ ƔǕǀƙ Ǒƽ Ɨƿǚƶ Ǥnj! ƗƛǒƥƠ!ƒ ƘǤǆǆĂǕƶǆ!ƒ ǇĐ Ɨʅƒƨƥ!ƒ ƘƥɳĂĂ

ǋǇƒ ƘƥɳĂ Ă ǗýĂƒƥƙ!ƒ Ďǌɳơ ǏǕƵ ƨǒƛǆƙ Ǥnj! Σǒ! ǋǇƒ Ɨǒơ ƗǒƑǤƮơƍ Ɨ!Ǘƥ Ƙƒǉ Ƙʅǒ! ƗǆǒƥǀƒƑ

ƨǤǚƤǕƒ ǇƒĂ ǗýĂƒƥƙ!ƒ Ďǌɳơ ǇƵ ǀƥǒƥɳ!ƒ ƘǤǆǆĂǕƶǆ!ƒ ýǚƤ ǇǆǆǇ Ďǌnjʅǜƒ ƨǤƶʅǤǚ ƌǚǇǉ!ƒ ǇƚǆǆǒǇ

.ǀƥǒɳ!ƒ ƨǤǚƤǕƒ ǇǆǆǇ Ďǌnjʅ!ƒ ƨƶʅ ƔǕǀƙ ǏǕƵ ƨǒƛǆƙ!ƒ ǇǆǆǇ ƥǒƨǆ!ƒ ƥ!Ăƙ ƗƑǒʅ!ƒ

:Mahasan and Singh (2008) .Đ

ĎǌƒƥƤƙʅǤǚ ǗƘǤǕǀƙ!ƒĂ ýĂƒƥƙ!ƒ ĎǌɳơĂ ƥƑƒĂƶ!ƒ ǇǛǚ Ɨƿǚƶ!ƒ ƨǤǚƙƤǤǚ Ɨʅƒƨƥ!ƒ ǉǨǋ ƘǆǤƿ

ǐǤǆǆĂǚ ƽĂʅ Ǒƽ (SENSEX) ƨƮƌǆ! ƗǒǆĂǒ!ƒ ƘǤǉǤǒǚ ǏǕƵ ƥǤǆƙƵǗǤĂ (GARCH) ƜƦĂǆǉ

.ĎČČĒ/ď Ǐ!ƍ čĕěĒ/čČ ǇǆǆǇ ǀƨƙƽǕ! ƥǉnj!ƒ Ǒƽ Ǒ!Ǥǆ!ƒ

ýĂƒƥƙ!ƒ Ďǌɳơ ǇǛǚ ƗǒƑǤƮơƍ Ɨ!Ǘƥ Ƙƒǉ ƗǒǚǤɳǒƒ Ɨƿǚƶ ƥĂɳĂ Ǐ!ƍ ǋƑǤǉ!ƒ ƘƨǤƮĐĂ

ýĂƮĂ! Ɨɳǒƙǉ ýĂƒƥƙ!ƒ Ďǌɳơ Ǐ!ƍ ƘǤǕǀƙ!ƒ ǇǆǆǇ ǋɳƙƙ ƗǒǚǚʅƗƿǚƶ ƥĂɳĂ Ă ǗƥƑƒĂƶ!ƒ ƘǤǕǀƙ!ƒ

Ǒƽ ǀƨǒƺƮ!ƒ ƘǤưǤƽƤǉǗƒ ǇĐ ƽƛĂǒ (GARCH) ǇǤƽ ǁ!ǉ Ǐ!ƍ ƗƽǤưǗǤǚ ǗǀƥǒƥɳƘǤǆǆĂǕƶǆ

ǏǕƵ ƨƮƌǆǆƚ ýĂƒƥƙ!ƒ ĎǌɳơýǤƤƥƍ Ďǌƙ ƒǉƍ ƗǆǆǤǋĂ ǀƨǒǚƚ ǏǀǚƙǇǆǆƨ!ƒ ƨĂƨǆ ƴǆ ǇǒǤǚƙ!ƒ ƗǒƨƒƨǆƙʅƑ

ǏǕƵ ǤĂư!ƒ ƱǕʅǒ ǐǉ!ƒĂ (GARCH and ARCH) ƘǤǕǀƙ!ƒ Ɨ!ƥǤƶǆ Ǒƽ ƘǤǆǆĂǕƶǆ!ƒ ýĂƮĂ

.ƽƒĂʅǗƒ ǀǤƽƚ

:Lu and Lin (2010) .[illegible]

[illegible]

[illegible] (VAR) [illegible]

[illegible] (SAIH) [illegible] (MDH) [illegible]

[illegible]

:Mubarik and Javid (2009) .[illegible]

[illegible] (VAR) [illegible]

- [illegible]
- [illegible]
- [illegible]

ƨǒǺǳǩ ƥĂƞĂ Ĭ!ƒĂ ÜƥƑƒĂƶ!ƒ ƘǦǶǖǀǩĂ ýĂƒƥǩ!ƒ ǅǚƞơ ǇǑǶ ƨǒǶǂ ýƵǦǭǩ ƥĂƞĂ Ĭ!ǫ ǋƑǦǨǰ!ƒ ƨǒƬǩĂ

ýƑǓƥ!ƒ ƨǒƬǩ ǂǒƥƨǭ!ƒ ǅǌǰƪǕƒ ǂ!Ǧơ Ǒǭ ÜǑ!Ǧơ!ƒ ǅĂǒ!ƒ ƥƑƒĂƵ ĬǖƵ ƾǶǦƪ!ƒ ǅĂǒ!ƒ ýĂƒƥǩ ǅǚƞơ! ƨǒǶǂ

ǅǚƞơ ýǦƤƥǫ ǅǩǒ ǦǆƥǰƵĂ ÜƥƑƒĂƶ!ǦǶ ƔǶƪǩǒ ǀƨĂƥǶ ĭƦ!ƒĂ ýĂƒƥǩ!ƒ ǅǚƞơ ƔǶƪǩ ƥƑƒĂƶ!ƒ ǀĂƿ ǇǗ Ĭ!ǫ

ǁǦǰǋ ǇǗ Ĭ!ǫ ƨǒƬǩ ǂǒǶǒƨƞǩ!ƒ ǋƑǦǨǰ!ƒ ǇǕǭ GARCH ǷƦĂǆǅǰ Ǒǭ ǇǑǦǶǩ!ƒ ǂ!ƥǦƶǆǅ Ĭ!ǫ ýĂƒƥǩ!ƒ

.ƥƑƒĂƶ!ƒ ƘǦǶǖǀǩĂ ýĂƒƥǩ!ƒ ǅǚƞơ ǇǑǶ ƨǒǶǂ ýƵǦǭǩ

:Tudor and Miron (2009) .ē

-ýĂƒƥǩ!ƒ ǅǚƞơ) Ă (ƥƑƒĂƶ!ƒ-ýĂƒƥǩ!ƒ ǅǚƞơ) ǇǅǆǕ ýǂ ƘǦǂƨơǩ ǂơǶǶ ǂƪƒƨƥ!ƒ ǰƦǋ ƘǅǆǦƿ

Ƙƒƨǒǯǩ!ƒ ƨǺƒ ǅǚǒǀǩ ýƞƒ ǇǅǆǦǅǆǅĂƨ Ǒǭ ǂǒ!ǦǅǆǅǆƵ!ƒ ƾƒƨĂǖ! ƘƪƨǦƤĂǶ ƾĂƪ Ǒǭ (ƥƑƒĂƶ!ƒ ƘǦǶǖǀǩĂ

ǅǚƤǩƪƒ ǂǒơ ƥƑƒĂƶ!ƒ ƘǦǶǖǀǩ ĬǖƵĂ ǅǌƪǕƒ ƥƑƒĂƵ ĬǖƵ ǂǒ!ǦǅǆƵ!ƒ ƾƒƨĂǕƒ ƾĂƪ ǂ!Ăǒƪ Ǒǭ

ýĂƒƥǩ!ƒ ǅǚƞơ ǇǑǶ ǂǒǂǒǅǆǦǇǒƥ!ƒ ǂƿǖƶ!ƒ ǇǅǆǕ ƾǀơǩ! (Granger-Causality) ƨǦǶƤƒ ǇǦǺơǦǶ!ƒ

ǀƨǦǶƵ ƘǦǇǦǒǶ!ƒ ƘǇǦǂĂ ÜǂǒǦǅǆƵ!ƒ ƾƒƨĂǖ! ƘƪƨǦƤĂǶ ƾĂƪ Ǒǭ ƥƑƒĂƶ!ƒ ƘǦǶǖǀǩĂ ǅǌƪǕƒ ƥƑƒĂƵĂ

ǇǅǆǕ ǀƨǩǭǖ! ýĂƒƥǩ!ƒ ǅǚƞơĂ ƔǂƨǅǆǕ!ƒ ƘƪƨǦƤĂǶ ǂƮƨĂǶ ƨƬǅǆǕ! ǂǒǅǆĂǒ!ƒ ƘƒƥǋǦƬǅǆǕ!ƒ ǇƵ

.ǂǒǅǆĂǒ ǀƥǋǦƬǅǆǕ ččĎď ƥƥƶǶ ĎČČĚ/ē Ĭ!ǫ ĎČČĐ/č

ƥƑƒĂƶ!ƒ ǇǅǆǕ ǋƞǩǩ ǰǦƞǩǕƒ ǂǒƥǦơǗ ǂǒƱƤ ǂǒǶǶƪ ǂƿǖƵ ƥĂƞĂ Ĭ!ǫ ǋƑǦǨǰ!ƒ ƘƨǦƬǗ ǂǒơ

.ƘǦǶǖǀǩ!ƒ Ĭ!ǫ ýĂƒƥǩ!ƒ ǅǚƞơ ǇǅǆǕĂ ýĂƒƥǩ!ƒ ǅǚƞơ Ĭ!ǫ

:Chiang et al, (2009) .Ě

ǂƮƨĂǶ! ƥƑƒĂƶ!ƒ ƘǦǶǖǀǩĂ ýĂƒƥǩ!ƒ ǅǚƞơ ǇǑǶ ǂƿǖƶ!ƒ ƨǦǶǩƤǦǶ ǂƪƒƨƥ!ƒ ǰƦǋ ƘǅǆǦƿ

ýĂƒƥǩ!ƒ ƘǦǇǦǒǶ ǇƵ ǀƨǦǶƵ ƘǦǇǦǒǶ!ƒ ƘǇǦǂĂ (Realized Model) ǅǚƤǩƪǦǶ (NASDAQ)

ǇǑǩǒƵƨǭ ǇǑǩǒǇǒƵ Ĭ!ǫ ǦǆǅǆƪǖǀǩĂ (ĎČČĐ/čČ/Ďē - čĕĕē/Ě/č) ǀƨǩǭǖ! ƾƑǦƿƥ ǂƪǅǆƤ ýǂ!

ǅ ĎČČč/Đ/Ď) ǀƨǩǭǖ! ǂǒǇǦ!ƒĂ (ĎČČč/ď/ďČ ǅ čĕĕē/Ě/č) ǀƨǩǭǖ! Ĭ!ĂǕƒ

ƥƑƒĂƵ ǇǑǶ ǂǒǂǒǅǆǦǇǒƥ!ƒ ǂƿǖƶ!ƒ ǂơǶǩ ǦǆǅǆǶǦǆǅǆǅǦǆ ǇƵ ǂƪƒƨƥ!ƒ ǰƦǋ ƶǅǆǩƤǩĂ .(ĎČČĐ/čČ/Ďē

ǂlƕƓٔ!ƒ ƘƓٔƒƧƥ!ƒ ƓƥǅƥǑƕ ǛlƧƓƘƤƥ ǂǒǍǒٔƊ ƾƒǍٔƊ lƥƶ! ƘƓƕlƘ!ƒǍ ýǍƒƥƘ!ƒ ƊƓƞơƊǍ ǂǒpǍٔ!ƒ Ɗǌٔǖƒ

.ýǍƒƥƘ!ƒ Ɗƞơǎ ýǍٔǖƒ ƧƓƶٔƊ ƘƓƕlƘ ǈǑƕ ǂǒ!ƓƓ!ƒ ǂǒƕƓƞǒǕƒ ƘƓpǖƶ!Ɠƕ Ʊl5 Ƙƌƕǉƙ

ǂpǖƵ ǁƓǉǋ Ʃǒ! ƝǇƒ ǈǑƕƙ ǑƱƤ!ƒ (Granger) ǕƦǍƥǉƕ ƘƓǉƓƕ!ƒ ýǒǁơƙ ýǖƤ ǇƥǍ

ƝǒƱƤ Ƨǒƹ ǂǒƕƕٔ ǂpǖƵ ǁƓǉǋ ýƕƓlƥ!Ɠƕ ǈǂ! ǛƘƓƕlƘ!ƒ Ǐ!ǫ ǐƥƌƙ ýǍƒƥƘ!ƒ Ɗƞơ Ǒ5 ƝǒƱƤ ǂǒƕƕٔ

ýǒ!ƥ Ɗƥlƙ ǂٔƒƧƥ!ƒ ǉƦǋ ǇƊ ǑƱƤ!ƒ Ƨǒƹ ƌƕǉƙ!ƒ ǕƦǍƥǉ ƔǍǁٔƊ ƩƓٔƊ ǏǁƵ .ǇǒƧǒƺƙƥ!ƒ ǇǒƦǋ ǇǑƕ

Ɗǒl!ƒ ƊƒƥƤƙٔƒ ƥǒƽƥ!ƒ ǇƥǇƒ ƧǌǕǒǍ (SAIH) ǂǒǁٔǁƙ!ƒ ƘƓƥǍǁƶƥ!ƒ ýǍٔǍ ǂǒưƧ5 ƊƵƥ! ǐǍp

.ƥƒǍƶ!ƒ ƘƓƕlƘƕ ƌƕǉƙǁ! ýǍƒƥƘǁ! ǂlƕƓٔ!ƒ

:Medeiros and Doornik (2008) .Čċ

ýǍƒƥƘ!ƒ Ɗƞơǎ ƥƒǍƶ!ƒ ƔǁlƘǍ Ɗǌٔǖƒ ƥƒǍƵ ǈǑƕ ǂpǖƶ!ƒ ƧƓƘƤƕ ǂٔƒƧƥ!ƒ ǉƦǋ ƘƥƓp

Cross-) ǇƥưƘƘ lƥƶƘƥ ýǒǁơƙ ƔǒٔƓٔƊ Ɗƒƥ/Ƥƙٔƕ ǂǒƓƥ!ƒ ƾƒƧǍǖ! ýǒƨƒƧƕ!ƒ ƾǍٔ!

Bivariate) ƔǍǁٔƊǍ Ǜ(Unit-Root tests) ƔǍǁٔƊǍ Ǜ(Correlation analysis

ƔǍǁٔƊǍ Ǜ(GARCH) ƔǍǁٔƊǍ Ǜ(simultaneous equations regression analysis

ǇƵ lƧƕƵ ƘƓǉƓƕ!ƒ ƘǉƓǂǍ .(Granger Causality tests) ƔǍǁٔƊǍ Ǜ(VAR-models)

Ǜ(ĎČČđ/čĎ/Ďě ǏǁĎČČČ/ď/č) lƧƘǁ! ǂǂƧƬ (đē)ù! ǂǒƥǍǒ!ƒ ýǍƒƥƘ!ƒ Ɗƞơǎ Ɗǌٔǖƒ ƥƒǍƵ

ƥƒǍƶ!ƒ ƘƓƕlƘǍ Ɗǌٔǖƒ ƥƒǍƵ ǈǑƕ ǂpǖƶ!ƒ ǂơƕƙ Ǒƙ!ƒ ƓǌƙƓlƕٔ ǇƵ ǂٔƒƧƥ!ƒ ǉƦǋ ƻǁƘƤƙǍ

ǋƑƓƘǉ!ƒ ƘƧƓƬƊǍ ǛƓưǒƊ ǂǒǂǒƥƓǉǒƥ!ƒ ǇǂǍ ǂǒ!ƓƓ!ƒ ǂpǖƶ!ƒ Ʊl5 Ʃǒ! ǑƱƺƙ ƓǌǇƓƕ ýǍƒƥƘ!ƒ Ɗƞơǎ

ƧƓƘƤƒ ƾǒƕƱƘ ýǖƤ ǇƥǍ ýǍƒƥƘ!ƒ Ɗƞơǎ Ɗǌٔǖƒ ƥƒǍƵ ǈǑƕ ǂǒƕƓƞǒƒ ǂpǖƵ ƥǍƞǍ Ǐ!ǫ

ýǍƒƥƘ!ƒ Ɗƞơ! ƘƓƥǍǁƶƥ ǏǁƵ ǐǍƘơǒ ƥƒǍƶ!ƒ ƔǁlƘ ǇƊ ƥƞǍ (Granger Causality tests)

.ǅưǒƊ Ʃǂƶ!ƒǍ ǑǁƕlƘٔƥ!ƒ

:Deo et al, (2008) .ČČ

ŀőĂőႢĐ ъſĂႢĐ Ɩþƶ! ƘĠŀůĿƙ!ſĂ ýĂſþƙ!ſ ĎƞƠĂ ĎǌႢŪſ þƑſĂƵ ǈĴŏ ŀpǚƶ!ſ ƧĠŀƙƤĠ ſĂĎĠp

ĎĠp ŀőƠ ÜƖĠƖƙǉĎĂ ƖƧƖƙႢĎ (ǈſĂőĠƙ ÜĂőŀĂƱ ÜĠőƧĂŀ ÜĠőƨő!ĠĎ ÜĠőႢőǉĂþǉſ ÜǋǉĂŀ ǋǉĂǌ Üþǉǌ!ſ)

:ŀpǚƶ!ſ ǉƦǌ ƧĠŀƙƤŮ ъƧƱ ƖþƵ ĎſþƤƙႢĠ

Linear and Non-Linear Trend in Trading Volume.
Test for Unit Roots.
Causal Relation between Trading Volume and Stock Price Changes.
Trading Volume and Conditional Volatility.

ъſĂႢŪ ýĂſþƙ!ſ ĎƞƠ ƴĎ ъ5ſĂƙĎ! ŎĎĂő!ſ ƧĠƶႢŪſ ƧƬƋĎ ǈƵ ƖƧĠƵ ƘĠǉĠŏ!ſ ƘǉĠŀĂ

ƖƧƙ5Ŀ! ǈĴĂőĠƙ ÜĂőŀĂƱ ÜĠőƧĂŀ ÜĠőƨő!ĠĎ ÜĠőႢőǉĂþǉſ ÜƸǉĂŀ ƸǉĂǌ Üþǉǌ!ſ ǈĎ ýŀ! ĎǌႢŪſ

ǈĴŏ ŀőƑĠƮƣ ŀ!Ůþ ƘſƦ ŀpǚƵ þĂƞĂ Ĭ!ǫ ŀႢſƧþ!ſ ƘƮĿƤĂ ÜĎČČĚ/ď/ďč IJ ĎČČĐ/č/č

ƘǉĠŀ ŎĿĿႢ!ſ (Granger) ƧĠŀƙƤſ ĎſþƤƙႢĠĂ ÜƧƶႢ!ſ ƘſƧőƺƙ! ŀĿƱĎ!ſ ŀĎőĿ!ſĂ ýĂſþƙ!ſ ĎƞƠ

ĎƲƶĎ! þƑſĂƶ!ſ ĎƞƠĿ ƧƛƋƙő ýĂſþƙ!ſ ĎƞƠ ǈſĂ ýĂſþƙ!ſ ĎƞƠĿ ƧƛƋƙ þƑſĂƶ!ſ ǈĐ Ĭ!ǫ ƧőƬƙ ǋƑĠƙǉ!ſ

.ĠǋƧĠŀƙƤſ Ďƙ Ŏƙ!ſ ъſĂႢŪſ

:Chukwuogor (2008) .Čč

ÜþƒſĂƶ!ſ ƘĠŀůĿƙĂ ƳĂĿႢŪſ ĎĠőĐ ǈĎ ĎĂő ƧőƛƋƙ þĂƞĂ ŀƠĿ Ĭ!ǫ ŀႢſƧþ!ſ ǉƦǌ Ƙ5þǌ

ƧƮĎ ƧƬƋĎ ŎǋĂ ŀőƖőƧ5ſ ĎǌႢĐ ƘſƧƬƋĎ ŀႢĎƤ! ŀőĂǉႢ!ſ þƑſĂƶ!ſ ýőĿƠƙ Ĭ!ǫ ŀ5ĠưŰĠ

ĠǉſĂႢƙĿĂ (JSE) ĠőƖőƧ5Đ ƔĂǉƞĂ (LSE) ĠőƧőƞőǉ Ă (All Share Index) ĠǉĠƸĂ (CCSI)

ƘſƧĠŀƙƤŮſ ǈĎ ŀƵĂĎƞĎ ĎſþƤƙႢſ Ďƙ þpĂ (Botswana Domestic Companies)

þƑſĂƶ!ſ ƱႢĂƙĎ (equality) Ƌ5Ġŀƙ ƧĠŀƙƤŮ (Parametric and nonparametric Test)

Ďƙ ýőĿƠƙ!ſ ſƦǌ ýĠĎŀƙႢŬĂ ÜƳĂĿႢŪſ ĎĠőĐ ǈĎ ĎĂő ýǚƤ ǈĎ þƑſĂƶĿ! ĭƧĠőƶĎ!ſ ƻſƧƠǉŬſĂ

ƖƧĠƵ ƘĠǉĠŏ!ſ ƘǉĠŀ þpĂ ÜŎǉĠŏ!ſ ĎႢƧ!Ġ ŀőĂǉႢ!ſ ƘſƧƬƋĎ!ſ ƘſƧőƺƙ! ŀőĂƋĎ!ſ ƔႢǉ!ſ ýőƛĎƙ

.ĎČČĐ ĎĠƵ Ĭ!ǫ čĕĕē ĎĠƵ ǈĎ ƖƧƙ5Ŀ! ŀőĎĂő!ſ ъǚƸŰſ ƧĠƶႢĐ ǈƵ

[illegible]

[illegible] :Mahajan and Singh (2008)

[illegible] (SAIH) [illegible] VAR, GARCH,) [illegible] (ARCH [illegible] National Stock Exchange [illegible] .(NSE)

[illegible]

[illegible] :Kiymaz and Girard (2007)

[illegible] (GARCH) [illegible]

LJD Ĭ!ş ǸƑƓƙǇ!ƒ ƘƧƓƬD ƥl5 ǁ!Ʀ Ĭ!ş Ɨ5Ɠư ŰƓƜ ǗƓǌƙƓƜǁlƙ Ŏ5 Ɠư Ɠ5ƤǇƒ ƧǌƲƙ ƗǇŏƶ!ƒ ƓǌƙǁǆƬ

LJƵ ƟƓƬ5Űƒ LJDĂ ýĂƒƥƙ!ƒ ǅƞơƜ ƗƱƜƙƧǆ!ƒ ƘƓǆĂǁƶǆ!ƒ ýƗ ΣƗƶƙ Ŭ ýĂƒƥƙ!ƒ ǅƞơ Ŏ5 ƘƓǆƥƬ!ƒ

.LJƓŏơŰƒ LJǆ ƧŏƛƗ Ŏ5 ýĂƒƥƙ!ƒ ǅƞơƜ Ɠǌ!ǖƤ LJǆ ƋƜǇƙ!ƒ LJƗǆŏ ƘƓǆĂǁƶǆ!ƒ ǉƦǋ

:Girard and Biswas (2007) .ČĐ

Ă lƧĂƱƙǆ ƽĂƪ ĎĎ Ŏ5 ýĂƒƥƙ!ƒ ǅƞơĂ ƘƓƜǁlƙ!ƒ LJŏƜ ƗƥǖƶǇƒ Ŏ5 ƗƪƒƧƥ!ƒ ǉƦǋ Ƙƛơƙ

ƗŏǆĂŏ!ƒ ƧƓƶƪŰƒ LJƵ lƧƓƜƵ ƘƓǇƓŏƜ!ƒ ƘǇƓƗĂ Ŭ(TARCH) ǛƦĂǆǇ ǅƒƥƤƙƪƓƜ ƗƑƬƓǇ ƽĂƪ Ďē

ƻŏǇƬƙ ǅƙ ƗŏơŬĎČČđ/Ē/ďČ Ĭ!ş čěĚČ/č/č LJǆ lƧƙ5ǁ! ƽĂƪ Đě ù!! ýĂƒƥƙ!ƒ ǅƓƞơDĂ

LJŏƜ Ɨ5ǁƙƤǆ ƘƓƜǁlƙ!ƒ LJD Ĭ!ş ƗƪƒƧƥ!ƒ ƘƬǁƤĂ ŬŎ!Ăƥ!ƒ ǁǇƜ!ƒ ƧŏŏƓƶǆĂ ƘƓ5ŏƧƶƙ ƔƪơƽƒĂƪŰƒ

LJŏƜ ƻǁƙƤŏ ƗƑŏƪ!ƒ ƧƓƜƤŰƒ ƧŏƛǆƙƓưŏDĂ ŬlƧŏƤǖ! ĬǁƵD ŎǋĂ ƗƑƬƓǇ!ƒĂ ƗǆƥlƙǆƓ!ƒ ƽƒĂƪŰƒ

Ɨǆƥ Ƭ ǅƞơ LJD ĂƥƜŏ ǁ!Ʀ ƴǆĂ ŬƗǆƥlƙǆ!ƒ ƽƒĂƪǖ! ĬǁƵD ĂǋǇĂ ƗƑƬƓǇ!ƒĂ ƗǆƥlƙǆƓ!ƒ ƽƒĂƪŰƒ

ČƓưĂư!ƒ lƧƓƞƙ ƥĂƞǋĂ Ĭ!ş ƥĂƶƙ ƓǆƜƧ Ŏƙ!ƒ ŬƗƑƬƓǇ!ƒ ƽƒĂƪŰƒ Ŏ5 ƗŏǆǇD ƧƛƗD ĂǋǇ ƘƓǆĂǁƶǆ!ƒ

.ƗƜƧƓưǆ!ƒ ƘƓƵƓl5Ă

: Nor and Cheong (2007) .Čđ

ƽĂƪ Ŏ5 ýĂƒƥƙ!ƒ ǅƞơĂ ƥƑƒĂƶ!ƒ ƘƓƜǁlƙ LJŏƜ ƗƥǖƶǇƒ ƧƓƜƙƤƓƜ ƗƪƒƧƥ!ƒ ǉƦǋ ƘƓǆƥƓ

ýŏǁơƙ! (VAR) ǛƦĂǆǇ ǅƒƥƤƙƪƓƜ LJƓƛơƓƜ!ƒ ǅƓƥ Ɨŏơ ƓǒƶŏƓǆ Ŏ5 Ɨŏ!Ɠǆ!ƒ ƽƒƧĂǖ! ƧĂƜǆ!ŰƒĂƗ

ǅǌƪ (čČČ) ù! ýĂƒƥƙ!ƒ ǅƞơĂ ǅǌƪŰƒ ƧƓƶƪD LJƵ lƧƓƜƵ ƘƓǇƓŏƜ!ƒ ƘǇƓƗ Ŏƙ!ƒĂ ŬƘƓǇƓŏƜ!ƒ

ƥĂƞĂ ǸƑƓƙǇ!ƒ ƘǇŏƜ ƥƤĂ Ŭ(ĎČČĒ/č/čđ-ĎČČď/č/č) lƧƙ5ǁ! ƧĂƜǆ!ŰƒĂƗ ƗƬƧĂƜ Ŏ5 ƗƞƧƥǆ

Ɨ!Ŭƥ ƘƒƦ ƗŏƜƓƞŏƒ ƗƥǖƵ ƥĂƞĂ Ă ŬƥƑƒĂƶ!ƒ ƘƓƜǁlƙ Ĭ!ş ýĂƒƥƙ!ƒ ǅƞơ LJǆ ǋƞƙƙ ƗŏƜƜƪ ƗƥǖƵ

lƧƬƓƜǆ ƗƥǖƵ ƗŏƜƜƪ!ƒ ƘƒƧƓƜƙƤŰƒ ƘǇŏƜ ƥƤĂ ŬƥƑƒĂƶ!ƒ Ɣǁlƙ ýĂƒƥƙ!ƒ ǅƞơ LJŏƜ ƗŏƑƓƬơş

.ƥƑƒĂƶ!ƒ ƘƓƜǁlƙĂ ýĂƒƥƙ!ƒ ǅƞơ LJŏƜ ƗơưƒĂ

:Kalbani (2005) .ČĒ

ǈĜďžƵ ƚƮƨĂŀ! Ďnjʅǖƒ þƑƒĂƵĂ ýĂƒþķ!ƒ Ďƞơ ǈĴŀ ƚpǚƶ!ƒ ýŏĿơķŀ ƚʅƒƨþ!ƒ ƘďžĜp

ýĂƒþķ!ƒ ĎƞơĂ ƚŏďžĂŏ!ƒ Ďnjʅǖƒ ƽǚƹƣ ƨĜƶʅĐ ǈƵ ǉƨĜŀƵ ƘĜǉĜŏŀ!ƒ ƘǉĜǂĂ ǗƚŏĜďž!ƒ ƽƒƨĂǖ!

ĎĜp ƚŏơ ǗĎČČĐ/čĎ/ďč Ĩ!ƥ ĎČČč/č/č ǈĴď ǉƨķƽĿ! ƚŏ!Ĝďž!ƒ ƽƒƨĂǖ! ǈĜďžƵ ƚƮƨĂŀ ƨƮƋďž!

.ƘĜǉĜŏŀ!ƒ ýŏĿơķ Ŏ5 (VAR) ǕƦĂďžǉ ĨĿƵ þĜďžķƵǗĜŀ ƚơĜŀ!ƒ

Ďƞơ Ĩ!ƥ Ďnjʅǖƒ þƑƒĂƵ ǈĴď ǊƞķķƚŏĂp ƚŏŀĜƞŏƒ ƚŏŀŀʅ ƚpǚƶ þĂƞĂ Ĩ!ƥ ǋƑĜķǉ!ƒ ƘƨĜƮĐĂ

Σ ǂƶ!ƒĂ ýĂƒþķ!ƒ Ďƞơ Ŏ5 ŎŀĿʅ ƨŏƺķ Ĩ!ƥ ĭþƋŏ þƑƒĂƶ!ƒ Ŏ5 ŎŀĿʅ!ƒ ƨŏƺķ!ƒ ǈĐ ƚŏơŀ ǗýĂƒþķ!ƒ

.ƠŏơƮ

:Darrat et al, (2003) .Čē

(Lead-Lag Ĩ!ƥ ƚ5ĜưǗĜŀ ƚŏ!Ĝơ!ƒ ƚŏ!þĜŀķ!ƒ ƚpǚƶ!ƒ ƨĜŀķƤĜŀ ƚʅƒƨþ!ƒ ǉƦǉ ƘďžĜp

Dow Jones Industrial ƨƮƋďž! Ďnjʅǖƒ þƑƒĂƵ ƘĜŀĿĺķĂ ýĂƒþķ!ƒ Ďƞơ ǈĴŀ Relation)

þƑƒĂƵ ǈƵ ǉƨĜŀƵ ƘĜǉĜŏŀ!ƒ ƘǉĜǂĂ ǗƚŏǂŏƨďžǖƒƒĿþơķďž!ƒ ƘĜŏǗĂ!ƒ Ŏ5 (DJIA) Average

ǈĴď ǉƨķƽĿ! ďČ ĜǊþþƵĂ (DJIA) ĎnjʅĐ ýŏďžƞ! ƽƑĜþþ ƚʅďžƤ ýǂ! ýĂƒþķ!ƒ ĎĜƞơĐĂ Ďnjʅǖƒ

ƚŏ!þĜŀķ!ƒ ƚpǚƶ!ƒ ƨĜŀķƤǛ (EGarch) ƚʅƒƨþ!ƒ ƘďžþƤķʅƒĂ ǗčēēĚ/Ē/ďČ Ĩ!ƥ čēēĚ/Đ/č

(GRANER-causality) ĎƒþƤķʅƒĂ ǗĎnjʅǖƒ þƑƒĂƵ ƘĜŀĿĺķ Ă ýĂƒþķ!ƒ Ďƞơ ǈĴŀ ƚŏ!Ĝơ!ƒ

.þƑƒĂƶ!ƒ ƘĜŀĿĺķĂ ýĂƒþķ!ƒ Ďƞơ (Lead-Lag Relation) ƨĜŀķƤǛ

ƚ!Ǜþ ƘƒƦĂ ƚŏŀĜƞŏƒ ƚŏ!Ĝơ!ƒ ƚŏ!þĜŀķ!ƒ ƚpǚƶ!ƒ ǈĐ Ĩ!ƥ ƚʅƒƨþ!ƒ ǉƦǉ ǋƑĜķǉ ƘƨĜƮĐ þpĂ

Ďž! ƚŏĺķďž!ƒ Ďnjʅ ĎēǜƒĂ ǗĎnjʅ ďČ ĜǊþþƵ ƹ!Ĝŀ!ƒ (DJIA) ĎnjʅĐ ǈĴď ĎnjʅĐ ďǜ! Ʊ!5 ƚŏƑĜƮơƥ

ƚŏơ ǗþƑƒĂƶ!ƒ ƘĜŀĿĺķĂ ýĂƒþķ!ƒ Ďƞơ ǈĴŀ ǖŏƑĜƮơƥ ƚŏƑĜƮơƥ ƚ!Ǜþ ƘƒƦ ƚŏŀĜƞŏƒ ƘĜƱĜŀķƨƒ ƨnjǙķ

Ŏķ!ƒ (MDH)ƘĜưƒƨķ5ƒ ýďž Ưpǉķŏ ƚŏ!Ĝơ ƱĜŀķƨƒ ƚpǚƵ þĂƞĂ ĨĿƵ ƚ!þǖƒ ƻƶư ǈĐ

ĎžƵþķ ǈĐ ǈĴď Ǜþŀ ǋƑĜķǉ!ƒ ǈĐ Ǜƥ Ǘ(ƘĜďžĂĿƶďž!ƒ ýĂƮĂ) ƚþơ!ƒ ƘpĂ Ŏ5 ƘĜŀĿĺķ!ƒ ƚĂþơ ƯƨķƽK

Lead-) ǗŘǍdžǰ ΘǍ ư Ǎǚ ǄƵƥƙ ǋƑǨƙǰ!ƒ Ǉǅ ƚ ŏơ (SAIH) ƚ ŏ ư Ƨ5 ǄƵƥƙ! ƘƇǦŋ (MDH)

.(DJIA) Ǆnjʅǅ ǇǆǆǇ Ƨŏǚƚ ƥƥƵ Ŏ5 (Lag

:Goetzmann and Massa (2003) .ČĚ

ƧǦǅŬƒ ǇǆǆǇ ƥŏƥƶ!ƒ ƒ ǔƤƙʅƒǍ ǇŏƧdžǍƙʅdžǚ! Ŏƚ Ǎǚʅ!ƒ Ƨ Ʈǰƶ!ƒ ƧŏƥƖǚ ƚʅƒƧƥ!ƒ ǰŘǌ ƘdžǦƥ

ƚŏŋŏƙƒƧƙʅǫ ǇǍƶǚƙŏ ǇŏŘ!ƒ ǇŏƧdžǍƙʅdž!ƒ ƥƥƵ ǉƧƛƚ ǇŏǙ ƚƶƥǍƙdž!ƒ ƚƥǖƶ!ƒ ýǍơ ƧǦǚƙƤǖ! ƚǙǚǦƖ!ƒ

Ǐ ƥƧ5!ƒ ƘǦǚǦʅơ!ƒ ǇƵ ǉƧǦǚƵ ƘǦǰǦŏǚ!ƒ Ƙǰǧƚ Ǎ ǕƽǍʅ!ƒ Ŏ5 (Disposition-Prone)

ƘǦǰǦŏǚ!ƒ ǰŘǌǍ (Nationwide Discount Brokerage Firm) ǦǋƧ5Ǎŏ Ŏƙ!ƒ ǇŏƧdžǍƙʅdžǚ!

čēĕč/č/č ǇǆǆǇ ǉƧƙ5ǚ! ƧdžǍƙʅdž ĚĒÜČČČ ǇǆǆǇ Ƨƛƚ Ǖ ƔǦʅơ čČČÜČČČ ǇǆǆǇ Ƨƛƚǅ ǏǚƵ ǏǍƙơƙ

ǇŏŘ!ƒ ǇŏƧdžǍƙʅdž!ƒ ƥŏƥơƙ! ǇŏƧdžǍƙʅdžǚ! Ƨŏǚƚ!ƒ ƥƥƶ!ƒǍ ƚǰŏƶ!ƒ Ǆŋơ Ƨǚƚ Ǎ čēĕĒ/čč/ĎĚ Ǐ!ǫ

ǦǦǰǚ! ǄnjŏƥǞ ýǍƒƥƙ!ƒ ƔǍǚʅǅ ǄƒƥƤƙʅƒ ǄƛǍ ǇǆǆǍ (Disposition-Prone) ƧŏƛƙǞ ǇǍƶ ư Ƥŏ

.ƚŏ ƚǍǚʅ!ƒ ýdžƒǍƶ!ƒ

ǄǦƵ ýƚƬǚ ƥdžƙƶƙ ƥƑƒǍƶ!ƒ ƘǦǚǚƖǍ ýǍƒƥƙ!ƒ Ǆŋơ ǇǆǆǇ ǖƚ Ǉǅ ǏǚƵ ƚ!ƥǅ ƚʅƒƧƥ!ƒ ƘƥŋǍ ƥƤǍ

ǇǍƶǚƙŏ ǇŏŘ!ƒ ǇŏƧdžǍƙʅdž!ƒ ǏǚƵ ƥdžƙƶƙ ƒƥŏƥơƙ Ƨƛƚǅ ýƚƬǚǍ ǕƽǍʅ!ƒ ƚǚŏƚƧƙ ǍǅŏŔǰǚ ǏǚƵ

.(Disposition-Prone) ƚŏŋŏƙƒƧƙʅǫ

:Sabri (2008) .čċ

ýŋƒ ǇǆǆǇ ƚŏǚƧƵ ƚŏ!ǦǆǆǇ ƽƒǍʅǅ Ě ù! ýǍƒƥƙ!ƒ ǄŋơǍ ǄnjʅǕƒ ƧǦƶʅǅ ƚƚƧơ ƚʅƒƧƥǚ ǄǦƥ

ǦǆǆǇƚ ƚŏƧnjƬ ƘǦǰǦŏǚ ǄƒƥƤƙʅǦǚ ǕǄnjʅǕƒ ƧǦƶʅǅ ƘǦǚǚƖƙ ǏǚƵ ýǍƒƥƙ!ƒ Ǆŋơ Ŏ5 ƘƒƧŏƺƙ!ƒ Ƨƛƒ ƥŏƥơƙ

) ƚŏƱ5ǰ Ƨŏƹ ƚƶǚƧǅ Ǎ ƚŏƱ5ǰ ýǍƥ ƚƶǚƧǕ Arab Monetary Fund (AMF) ǦǋƧnjǕǅ

ƧƮǆǆǇ ǄƒƥƤƙʅǦǚ ǁ!ŘǍ (ǇǦǆǆǇƵ ǕǇŏƧơǚ!ƒ ǕƘŏǍƚ!ƒ ǕƚŏƥǍƶʅ!ƒ ǕǇǦǰǚ! ǕƔƧƺǆǆǇ!ƒ ǕǇƥƧǕƒ ǕƧ ƮǆǆǇ

ǇǆǆǇ ǉƧƙ5ǚ! (AMF) ǦnjƹǦƮ Ŏƙ!ƒǍ (unified stock price index) ƥơǍdž!ƒ Ǆnjʅ!ƒ Ƨƶʅ

.ĎČČĒ Ǐ!ƒ čēĕĐ

[illegible] (Standard Deviations) [illegible] Correlation) [illegible] (Linear Association) [illegible] (Coefficient [illegible].

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

(č-ď) [illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible] (VAR)	[illegible]	[illegible]	[illegible] (ĎČČĚ)
[illegible]	[illegible] (GARCH)	[illegible]	[illegible]	Darwish (2011)
[illegible]	[illegible] (GARCH)	[illegible]	[illegible]	Boubaker and Makram (2011)

.ŀŏSƒSďžkႢŰƒ Ư5P Ŏ5 ŀŏďžNjᴅ ƒŖ Σŏ!				
Diebold and SĞhkPƒ ŀơĞh!ƒ DžþPkႢƒ ĞďžþǈZĂ ƨSƒĂ5!ƒ ŀŏďžNjᴅ ŀႢƒSþ! Mariano Test (MD) ƨSƒĂ5 þŋŏ Dž! ÜƘĞhǘIk!Ğh ĈĂhk!ƒ ƜŖĞďžǈ ĈĞƱPᴅ LJŏh .ŀႢ5ĞǈkďžǈƒƜŖĞďžǈ!ƒ ĈĞƱPᴅ LJŏh ŀŏƑĞႢơƍ ŀ!Ŭþ ƘƒŖ	GARCH, ARCH, EGARCH	ŀŏďžĂŏ!ƒ þƑƒĂz!ƒ	ƘƒSTƌďž ŀʎǚʎ ŀŏSႢďž DžnjႢᴅ ŎNj (HFI,CIBC100,EGX30)	Abd El Aal et, al. (2011)
ƘĞďžĂǘzďž!ƒ ýǚP LJďž DžnjႢŰƒ SĞzႢƌh ƌhǈk!ƒ LJŧďžŏ ŀƑŏႢ!ƒ SĞhPŰƒ LJƒĂ ÜýĂƒþk!ƒ Džŋơ LJZ ȴþŏþŋ!ƒ LJďž DžnjႢ!ƒ SzႢ ɣǘIk ĬǘZ Sŏʎƌk!ƒ LJďž þŏsďž!ƒ þ!Ăk .ȴþŏŋ!ƒ SĞhPŰƒ	GARCH,) EGARCH, PGARCH, TARCH, (ARCH	ƘĞǈĞŏh!ƒ ƘǈĞŧĂ Džŋơ LJZ ȴSĞhZ SzႢĂ ýĂƒþk!ƒ ù! ŎďžĂŏ!ƒ ƨǚƷŰƒ þ!Z (ďČ)	National Stock Exchange þǈnj!ƒ Ŏ5	Tripathy (2010)
ƘĞhǘIkĂ ýĂƒþk!ƒ Džŋơ LJŏh ŀŏhĞŋŏƒ ŀþǚZ þĂŋĂ ƘĞhǘIk!ƒ LJďž Njŋkk ŀŏhhႢ ŀþǚZ þĂŋĂ Ă ÜþƑƒĂz!ƒ ÜýĂƒþk!ƒ Džŋơ Ĭ!ƍ	ƜŖĂďžǈ (GARCH)	ŀŏďžĂŏ!ƒ ƘĞǈĞŏh!ƒ STƌďž! (SENSEX)	ĭĞhďžĂh ƨĂႢ Ŏ!Ğďž!ƒ	Mahasan and Singh (2008)
ƘĞhǘIk LJŏh ǉĞŋkŰƒ ŀŏƑĞǈʎ ŀŏhhႢ ŀþǚZ ǁĞǈNj ýĂƒþk!ƒ DžĞŋơᴅ LJƒĂ ÜýĂƒþk!ƒ DžĞŋơᴅĂ þƑƒĂz!ƒ DžĞŋơᴅ ĬǘZ ƭSŏhŧ ƒSŏʎƌk SʎƌkŀĺhĞႢ!ƒ ƘĞhǘIk!ƒĂ .ŀŏ!Ğơ!ƒ þƑƒĂz!ƒ ƘĞhǘIkĂ ýĂƒþk!ƒ	ƜŖĂďžǈ (VAR)	DžŋơĂ þƑƒĂz!ƒ ŀlŏþþ ýŧ! ýĂƒþk!ƒ	LJƒĂŏĞk ƨĂႢ ŀŏ!Ğďž!ƒ ƨƒSĂǚ!	Lu and Lin (2010)
ĬǘZ ƨhĞႢ!ƒ DžĂŏ!ƒ ýĂƒþk Džŋơ! Sŏhŧ Sŏʎƌk þĂŋĂ SŏTk ŀŏþS5!ƒ DžnjႢŰƒ ŀ!Ğơ Ŏ5 ÜŎ!Ğơ!ƒ DžĂŏ!ƒ þƑƒĂZ ýĂƒþk!ƒ Džŋơ ɣhႢk þƑƒĂz!ƒ ȴĂþ LJᴅ Ĭ!ƍ ýƑŰþ!ƒ .þƑƒĂz!Ğh ɣhႢkŏ ȴSĂþh ĭŖ!ƒĂ	ƜŖĂďžǈ (VAR)	ýĂƒþk!ƒ Džŋơ DžnjႢ ýŧ!Ă STƌďžǘ! ŀ5ĞưŰĞh ǉþơ ĬǘZ STƌďžǘ! þƑƒĂz!ƒ Ĭ!ƍ DžnjႢŰƒĂ	ŎTkƒSŧ ŀƮSĂh LJĞkႢŧĞh!ƒ Ŏ5	Mubarik and Javid (2009)
LJďž Njŋkk ǉĞŋkŰƒ ŀŏþĞơᴅ ŀŏƱP ŀŏhhႢ ŀþǚZ þĂŋĂ Ĭ!ƍ ýĂƒþk!ƒ Džŋơ LJďžĂ ýĂƒþk!ƒ Džŋơ Ĭ!ƍ þƑƒĂz!ƒ .ƘĞhǘIk!ƒ	SĞhkPƒ Granger-Causality	ŀŏďžĂŏ!ƒ ƘƒþNjĞTďž!ƒ ŀƮSĂh STƌďž! ɣŧSďž!ƒ ƘႢSĞPĂh ýĂƒþk!ƒ DžŋơĂ	ƨĂႢ Ŏ5 ƘႢSĞPĂh ŀŏ!Ğďž!ƒ ƨƒSĂǚ!	Tudor and Miron (2009)
ýĂƒþùk!ƒ Džŋơ Ŏ5 NŏƱP ŀŏhhႢ ŀþǚZ ǁĞǈNj Σŏ! ŀùþǚZ ǁĞùǈNj ýhĞIďž!Ğh LJŧ! ÜƘĞhǘIk!ƒ Ĭ!ƍ ĭþƌk LJŏSŏʑkďž!ƒ LJŏŖNj LJŏh NŏƱP Sŏʑ ŀŏhhႢ	SĞhkPƒ Granger-Causality	ýŧ! ýĂƒþk!ƒ ƘĞǈĞŏh ƨƑĞþþ ŀႢďžP	ŀƮSĂh (NASDAQ)	Chiang et al, (2009)

[illegible] (Granger Causality tests) [illegible]	[illegible] (GARCH) (VAR-) Granger) Causality tests	[illegible]	[illegible]	Medeiros and Doornik (2008)
[illegible]	[illegible] (Ganger Causality Test)	[illegible]	[illegible]	Deo et al, (2008)
[illegible]	[illegible] Parametric and nonparam-etric Test	[illegible]	[illegible]	Chukwuogor (2008)
[illegible]	[illegible] VAR,) GARCH, (ARCH	[illegible]	National Stock [illegible] Exchange [illegible]	Mahajan and Singh (2008)
[illegible]	[illegible] (GARCH)	[illegible]	[illegible]	Kiymaz and Girard (2007)

[illegible]	[illegible] (TARCH)	[illegible]	[illegible]	Girard and Biswas (2007)
[illegible]	[illegible] (VAR)	[illegible] ([illegible]) [illegible]	[illegible]	Nor and Cheong (2007)
[illegible]	[illegible] (VAR)	[illegible]	[illegible]	Kalbani (2005)
[illegible] (MDH) [illegible] (SAIH) [illegible] (Lead-Lag) [illegible] (DJIA).	E- [illegible] GARCH & Grander-Causality	[illegible] (DJIA) [illegible]	Dow [illegible] Jones Industrial Average (DJIA)	Darrat et al, (2003)
[illegible] (Disposition-Prone).		[illegible] Nationwide) Discount Brokerage (Firm	[illegible]	Goetzmann and Massa (2003)
[illegible]	تم استخدام معادلات standard deviations	[illegible] Arab [illegible] Monetary	[illegible])	Sabri (2008)

[illegible]	& linear association	Fund (AMF) [illegible]	[illegible] ([illegible]	

[illegible] - [illegible]

[illegible] ([illegible]) [illegible]

(Ali kalbani) [illegible] 2005 [illegible] (VAR) [illegible] (Granger Causality test) [illegible] .(Contemporaneous)

[illegible] Vector Error Correction) [illegible]

Ł]ƒƧþ!ƒ ljRNj ƨŏdžkk ĝdž‡ (Model, Johnson Cointegration test, Granger Causality

.ĎČčč DžĜŽ Ǐ!ǧ ĎČČĎ DžĜŽ LJdž ƘƒĂLj] čČ ŎNjĂ ĝnjk!ĂĜljk Ŏk!ƒ Łŏljdžƨ!ƒ lƧks!Ĝu

ƲǴƸƥǁǚ üƬƧǁǚ

ƽƨƸƥǪǁǚ ƽǐƜǋǆǅ

.ƽƨƸƥǪǁǚ ǃƑǆƑǐǴ Č-ď

. ǃƑǅǌǂǅǁǚ ƲǅƜ ƥǪƑƬǅ č-ď

.ƑǊƨƑǐƽǌ ƽƨƸƥǪǁǚ ǃƸǐƷǂǅ Ď-ď

ƽƨƸƥǪǁǚ ǂƤǌǅǆ ď-ď

UGȻβllȻ üT2llȻ

hu2Ȼβqll Ȼ huĭШNJdžDŽ

:hu2Ȼβqll Ȼ lFdžFĭG Č-ď

KG‡2T!f yõdžη! ýĂfβk!f DžGηơDĂ Džnjl Ūf ѕ ǔ Ȼ 2Gzl D ‡l f2β!f ljRNj KGLjGõh KШdžT β!

ĎČčč/čĎ/ď č Ĭ!ç ĎČČĎ/č/č LJdž l2k5!f ýǔP ‡ŏ!Gdž!f ѕf2ĂūǃLJGdžZ ‡Ţ2Ăh Ö5 ‡η2βdž!f

Džnjl D ýĂfβk Džk βp LJĂ‡ŏ LJD ĂNjĂ KG‡2T!f ljRNj LJdž ư LJdž ‡Ljöz!f 2GõkPŰ 2Gõzdž y′ư Ă Džk ‡ŏơ

đĐ Ĭ!ç Gnjkõ5Ţk Džk βpĂ ‡l f2β!f lβdž ýǔP DžGõD čČ ý‡ lβơfĂ l2dž ýpŪf ĬШZ ‡‡2T!f ljRNj

.2Gõzdž!f fRNj Yl ơ ‡‡2T

: l FDŽNj‡yDŽllȻ UDŽШ βqFTDŽ č-ď

:GdžNjĂ LJõõl Gl D LJõ2βŢdž LJdž KGdžĂШzdž!f ydžη Džkõl ‡l f2β!f 2fβNjD ѕõlơk!

Ǒù5 ‡ùŏ!Gdž!f ѕf2Ăūù! LJGùdžZ ‡ùŢ2Ăh KƒTùLj ĬШZ βGdžkZŰf Džkõl ‡ŏơ :‡ŏ!ĂD 2βGŢdž

.‡l f2β!f ‡LjöZ KG‡2T!f KGLjGõhĂ ‡ŏ!ĂŪf KGLjGõh!f ýĂŢơ!f

Ư ùzh Ĭ!ç ‡5GưÚGh ‡ödžШz!f Kǔηdž!fĂ Yk‡!f LJdž KGdžĂШzdž!f ydžη Džkõl ‡ŏơ :‡õĂLjGλ 2βGŢdž

.‡lhGl!f KGl f2β!fĂ ‡GơhŪf

:FNJ2FĭѕNj hu2Ȼβqll Ȼ lȻβĭȻ‡DŽ Ď-ď

(Volume) ýĂfβk!f Džηơ č-ď-Đ

LJõùzdž KpĂ ýǔP Ǒ5 Ƶl5 GnjõШZ KGl5Ţ!f Kdžk Ǒk!f Džnjl Ūf ββZ NLjdh ‡5õ2zk LJ‡džõĂ

‡ù!βGzdž!Gh ýùλdždž ĂùNj Gdž‡ (VOL) 2dž2!Gh N! 2dž2õĂ ÜKGhШƵ!fĂ Ư Ă2z!f ‡5G‡ LJdž ư LJdž

:‡ŏ!Gk!f

$$VOL = \log(Q)$$

Q: Gnj!Ăfβk Džk Ǒk!f Džnjl Ūf ββZ ĂD ‡ŏdž‡

(Return) Dǐnjʅǖƒ þƑƒĂƵ Ď-ď-Đ

ƽǚƸǫĂ Ŏ!Ǵơ!ƒ DžĂö!ƒ Ŏ5 Dǐnjʅ!ƒ Ƨƶʅ ƽǚƸǫ LJöƞ ƽƧƺ!ƒ NǈǈƞDǐnjʅ!ƒ þƑǴƵ ƻöƧƶƙ LJǂdžöĂ

:Ƚö!Ǵƙ!ƒ Ƚ!þǴƶdž!ƒ Ŏ5 LJöƞdž ĂNj Ǵdžǂ ȽöĂƋdž Ƚƞʅǈǂ NƞǴʅƙơ DžƙöĂ ƽƞǴʅ!ƒ DžĂö!ƒ Ŏ5 Dǐnjʅ!ƒ Ƨƶʅ

$$Return = ln\frac{Pt}{Pt-1}$$

Pt: Ŏ!Ǵơ!ƒ DžĂö! Dǐnjʅ!ƒ Ƨƶʅ

Pt-1: ƽƞǴʅ!ƒ DžĂö! Dǐnjʅ!ƒ Ƨƶʅ

(Volatility) Dǐnjʅǖƒ þƑƒĂƵ ƘǴƞǈƙ ď-ď-Đ

ǴnjƱʅĂƙdž LJƵ ȽödžĂö!ƒ þƑĂƶ!ƒ ƘƙƬƙ Ƨƒþƚdž NǈƒĬǈƵ þƑĂƶ!ƒ ƔǈƙƻöƧƶƙ LJǂdžöĂ

Ǵdžǂ ȽödžĂö!ƒ þƑĂƶ!ƒ ƴƞƧdž ƦƤƒ ýǚƤ LJdž NƞǴʅƙơƒ Džƙö ĭƦ!ƒĂ (VOT) ƨdžƧ!Ǵƞ N! ƨdžƧö ĭƦ!ƒĂ

:Ƚö!Ǵƙ!ƒ Ƚ!þǴƶdž!ƒ Ŏ5 LJöƞdž ĂNj

$$VOT = R^2$$

:ƞƨƸþƣǈƸ ȽƤNjDždž ď-ď

ƻĂƧƶdž!ƒ ĂƉ (Vector Error Correction Model) ǕƦĂdžǈ ȽʅƒƧþ!ƒ ǈƦNj DžþƤƙʅƙ

(Granger) Ĭ!ǫ Ƚ5ǴưǗǴƞ (Cointegration Johansen test) ǕƦĂdžǈĂ (VEC) ùƞ

Dǐnjʅǖƒ þƑĂƵ LJöƞ ȽöǂödžǴǈöþ!ƒ ƘǴþǚƶǈ! ȽöƶþƒĂĂ Ƚþþ ƧƛǂƉ ƝƑǴƙǈ ǴǴƱƵǗ Causality test

.ýĂƒþƙ!ƒ DžƞơĂ ǴnjƙǴƞǈƙƙĂ

:Ŏ!Ǵƙ!ƒ ĂơǈƒĬǈƵ ƘƒƧǴƞƙƤǗƒ ǈƦNj LJĂǂƙʅĂ

- ýĂƒþùƙ!ƒ Džƞơ LJöƞ Ƚöƞƞʅ!ƒ ȽþǚƶƑƒ ƧǴƞƙƤǗ (Granger Causality test) DžƒþƤƙʅƒ Džƙ

.ăƧƤƉ Ƚnjƞ LJdž Dǐnjʅǖƒ þƑĂƵ ƘǴƞǈƙĂ ýĂƒþƙ!ƒ Džƞơ LJöƞĂ Ƚnjƞ LJdž þƑĂƶ!ƒĂ

(ĭǴùƜǆĂƜ) ƨĂỊ ƘỊƧƥ ǑƙƒĂ Mahasan and Singh (2008) ƗỊƒƧƥ ƘǆǴƥ ƗŏơƘǴùƜǁƖƘĂ ýĂƒƥùƙ!ƒ ǅùƞơ ǇŏƜ ƗŏƜƜỊ!ƒ ƗƥǖƶƺƒƧǴƙƤǓ (Granger) ǕƦĂǆǈ ǄƒƥƤƙỊǴƜ ƥǉǌ!ƒ Ǒ5ĬùǁƵ ƘùŏƧƞƋ ǑùƙƒĂ Tudor and Miron (2009) ƗỊƒƧƥ ƘǆƥƤƙỊƒ Ǵǆƚ ǕǅǌỊǕƒ ƥƑƒĂƵǄùƞơ ǇŏùƜ ƗŏƜƜỊù!ƒ ƗƥǖƶƺƒƧǴƙƤǓ (Granger) ǕƦĂǆǈ (ƗŏǴǆ!ƒ ƨƒƧĂǖ! ƘỊƧǴƤĂƜ ƨĂỊ)

.ƥƑƒĂƶ!ƒ ƘǴƜǁƖƘĂ ǅǌỊǕƒ ƥƑƒĂƵ ǇǆŭƚĂ ýĂƒƥƙ!ƒ

ƨƒƧĂǖù! ǇŏƱỊùǁ5 ƨĂùỊ) ƘùỊƧƥ Ǒƙ!ƒ Darwish (2011) ƗỊƒƧƥƚ ƘƒƧŏƺƙǆ!ƒ

.(ƧĂƜǆ!ǕƒĂƚ) ƨĂỊ ƘỊƧƥ Ǒƙ!ƒ Nor and Cheong (2007) ƗỊƒƧƥĂ Ǖ(Ɨŏ!ǴǆƓ

:Ɨŏ!Ǵƙ!ƒ ƘǕƥǴƶǆ!ƒ ƗƸǴŏƬ ǅƙ ƗƥǖƶƺƒƧǴƙƤǓĂ

$$VOL(t) = a_0 + \sum_{i=1}^{n} a_{1i}\,\Delta VOL(t-i) + \sum_{i=1}^{n} a_{2i}\Delta Rutern(t-i) + e_{it}$$

$$Rutern(t) = a_0 + \sum_{i=1}^{n} a_{1i}\,\Delta Rutern(t-i) + \sum_{i=1}^{n} a_{2i}\Delta VOL(t-i) + e_{it}$$

$$VOL(t) = a_0 + \sum_{i=1}^{n} a_{1i}\,\Delta VOL(t-i) + \sum_{i=1}^{n} a_{2i}\Delta VOT(t-i) + e_{it}$$

$$VOT(t) = a_0 + \sum_{i=1}^{n} a_{1i}\,\Delta VOT(t-i) + \sum_{i=1}^{n} a_{2i}\Delta VOL(t-i) + e_{it}$$

Vol: ǑǆĂŏ!ƒ ýĂƒƥƙ!ƒ ǅƞơ

Return: ƗŏǆĂŏ!ƒ ƥƑƒĂƶ!ƒ

VOT: ƥƑƒĂƶ!ƒ ƘǴƜǁƖ

- [illegible]

[illegible] Johnson) [illegible]

.(Cointegration test

[illegible] (DAX) [illegible] Liesenfeld (2002) [illegible] (Cointegration) [illegible]

[illegible].

[illegible]:

$$VOL_t - VOL_{t-1} = \alpha(VOL_{t-1} - dReturn_{t-1}) + \beta(Rrturn_{t-1} - Return_{t-1})$$
$$lagged\,(\Delta Return\ and\ \Delta VOL) + e_t$$

$$VOL_t - VOL_{t-1} = \alpha(VOL_{t-1} - dVOT_{t-1}) + \beta(VOT_{t-1} - VOT_{t-1})$$
$$lagged\,(\Delta Return\ and\ \Delta VOL) + e_t$$

d: (stationary) [illegible]

- [illegible] (Vector Error Correction Model) [illegible] (Short Run) [illegible] (VAR) [illegible] (vector Autoregression Model) [illegible] (Lag) [illegible] (Cointeration) [illegible] (Akaike Information Criterion) [illegible] .

[illegible] (VAR) [illegible] Mubark and Javid (2009) [illegible]

[illegible]

[illegible]

[illegible]

$$D(VOL) = \beta_0 + \beta_1 * (VOL_{-1}) + \beta_1 * (VOT_{-1}) + \beta_2 * (VOL_{-1}) + \beta_2 * (VOL_{-2}) + \beta_3 * (VOT_{-1}) + \beta_3 * (VOT_{-2})$$

$$D(VOT) = \beta_0 + \beta_1 * (VOL_{-1}) + \beta_1 * (VOT_{-1}) + \beta_2 * (VOL_{-1}) + \beta_2 * (VOL_{-2}) + \beta_3 * (VOT_{-1}) + \beta_3 * (VOT_{-2})$$

$$D(VOL) = \beta_0 + \beta_1 * (VOL_{-1}) + \beta_1 * (Return_{-1}) + \beta_2 * (VOL_{-1}) + \beta_2 * (VOL_{-2}) + \beta_3 * (Return_{-1}) + \beta_3 * (Return_{-2})$$

$$D(Return) = \beta_0 + \beta_1 * (VOL_{-1}) + \beta_1 * (Return_{-1}) + \beta_2 * (VOL_{-1}) + \beta_2 * (VOL_{-2}) + \beta_3 * (Return_{-1}) + \beta_3 * (Return_{-2})$$

ƨ ÐǰƑƠǁǁƐ üƬƺǁƐ

ǀ ƑǆǰƑǐƓǁƐ üǐǂƮƗ

Ð - Č ƐǖƮƬƑƬƐǀ ƐǁƬƬǓǐǉ.

Ð - č ƗƮǂǐǃ ƐǖǍƑǃǐƑǆ ǀ ƐƄƑƩǆǐǄǏƑƩǁƆ.

Ð - č - Č ƐǖƗƑƨ **Johansen Cointegration test.**

Ð - č - č ƐǖƗƑƨ **Granger Causality test.**

Ð - č - Ď ƐǖƗƑƨ **Vector Error Correction Model.**

ƨ ƊŽƑƇƖƐ üƬƨƐ

ƖƑƶƑĪǴƖƐ üǐǂƟǂ

ýĂƒþùk!ƒ Ɗùηơ LJŏh ǂŏǂŏdžĹjŏþ!ƒĂ ǂŏhhƖ!ƒ ǨǴpǔz!ƒ ƨĜhkPŮ ƜǏǴdžLj lþƵ ƊžƒþPkƖƒ Ɗžk þ!

ýùŏǁơk! ŎƑǴƬơÚƒ (EViews) ɲdžǴjƨh ǏǁƵ þǴdžkƵŮǴh þƑƒĂz!ƒ ǨǴhǁǀkĂ ƊznjƖǖƒ þƒĂƵ LJdž ýǂĂ

:ǴnjɳƑǴkLj Ơŏ ư ĂkĂ ǨǴjǴŏh!ƒ ýŏǁơkĂ ǂŏ5ƬĂ!ƒ ǨƒCǴƬơÚƒ Ŏǁŏ ǴdžŏƽĂ ǨǴjǴŏh!ƒ

hŭƲTNjllƐ ƖƐbƑTΘǖƐ Č-Đ

Ɗùηơ! ŎhǴƖùơ!ƒ ƱƖĂ!ƒ LJƊ LJŏhk (č-đ) Ɗžpƨ ǂŏ5ƬĂ!ƒ ǨƒCǴƬơÚƒ ýĂþη ýǔP LJdž

LJŏùh ΘĂƒƨkŏ ýĂƒþk Ɗznơ LJǴǂĂ (Đ,đĚč) ƱŏƖĂ!ƒ LJǴǂ ǴdžLjŏh (Đ,đĎđ) LJǴǂ (VOL) ýĂƒþk!ƒ

ǴnjƱùƖĂ LJùƵ Ɗžùl!ƒ ljRùNj Ƶƒƨơǖƒ ƐǁƊ þpĂ ǏLjþƊ þơǂ (-Č,ďĐē) Ă ǏǁƵƊ þơǂ (Ě,đČĐ)

.(č,čĎČ) ŎhǴƖơ!ƒ

LJǴùǂĂ (Đ,čēĐ) ƱŏùƖĂ!ƒĂ (Đ,čČĐ) ýĂƒþk!ƒ Ɗznơ ǂŏdžǂ! ŎhǴƖơ!ƒ ƱƖĂ!ƒ LJǴǂ ǴdžLjŏh

þùơǂ (ē,ĒĐĎ) LJŏùh ΘĂƒƨkk ǨLjǴǂ Ŏk!ƒĂ (č,Čď′) ŎhǴƖơ!ƒ ǴnjƱƖĂ LJƵ Ɗžŏl!ƒ ljRNj Ƶƒƨơǖƒ

.ǏLjþƊ þơǂ (Č,ČČČ) Ă ǏǁƵƊ

LJƵ ĭƨǴŏƶdž ƵƒƨơǖjǴh (Ď,Đď′Č) ƱŏƖĂ!ƒĂ (đ,ēēē) ƨƶƖǁ! ŎhǴƖơ!ƒ ƱƖĂ!ƒ LJǴǂ þpĂ

.ǏLjþƊ þơǂ (Č,čĒČ) Ă ǏǁƵƊ þơǂ (ď′Ēđ) LJŏh ƨƶƖ!ƒ ΘĂƒƨk þpĂ (ĎČ,ď′ď) ƨƒþldžh ƱƖĂkdž!ƒ

LJǴùǂ þùl5 ƱŏùƖĂ!ƒ ǁ!ǂĂ (Č,ČČČ) ƊznjƖǖƒ þƒĂƵ! ŎhǴƖơ!ƒ ƱƖĂ!ƒ ǂdžŏp ǨLjǴǂ þpĂ

ǏùǁƵƊ þùơǂ (Č,ď′čĚ) LJŏùh ƨƶƖù!ƒ ΘĂƒƨk ǂŏơ (Č,ČĎē) ĭƨǴŏƶdž ƵƒƨơǖjǴh (Č,ČČČ)

.ǏLjþƊ þơǂ (-Ď,ď′čĎ)Ă

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

	VOL	QTY	PRICE	RETURN	VOT
Mean	4.525	4.104	5.777	0.000	0.001
Median	4.581	4.174	2.430	0.000	0.000
Maximum	8.504	7.642	365.000	0.318	5.345
Minimum	-0.347	0.000	0.160	-2.312	0.000
Std. Dev.	1.120	1.033	20.330	0.027	0.019

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[illegible]

Johansen Cointegration Test [illegible]

[illegible]

[illegible]

[illegible]

[illegible] Cointegration [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

ҜùԏƧþ Ŏùƙ!ƒĂ Tripathy (2011) ƚԏƒƧþ ƚŏ!ƈ ҜƮǁƤ Ǥǆ ýǆ ƚɳŏƙǈ!ƒ ǉƦǋ ƽƼƒĂƙƙĂ

þĂɳĂ Ĭ!ǫ ҜƮǁƤ ƚŏơ Üƚŏ!Ǥǆ!ƒ ƽƒƧĂű! þǈǌ!ƒ ƽĂԏ! ǅǌԏŰƒ þƑƒĂƵĂ ýĂƒþƙ!ƒ ǅɳơ ǇǑǓ ƚþŭƶ!ƒ

.ýɳŰƒ ýŏĂƱ ăþǆ!ƒ ĬǁƵ ǅǌԏŰƒ þƑƒĂƵĂ ýĂƒþƙ!ƒ ǅɳơ ǇǑǓ ǁƧƙƬǆ ýǆǤǂƙ!ƒ ƚþŭƵ

(Ď-đ) ǅþƧ ýĂþɳ

(Johnson Cointegration test)

ǅǌԏŰƒ þƑƒĂƵĂ ýĂƒþƙ!ƒ ǅɳơ ǇǑǓ ǁƧƙƬǆ!ƒ ýǆǤǂƙ!ƒ ƧǤƙƤƒ

	Hypothesized		Trace	0.050	≥ 0.05
	No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
co1	None	0.196*	426.124	15.495	0.0001
	At most 1	0.017*	31.164	3.841	0
co2	None	0.182*	377.872	15.495	0.0001
	At most 1	0.028*	47.390	3.841	0
co3	None	0.127*	253.810	15.495	0.0001
	At most 1	0.024*	38.757	3.841	0
co4	None	0.176*	301.831	15.495	0.0001
	At most 1	0.019*	26.767	3.841	0
co5	None	0.150*	282.245	15.495	0.0001
	At most 1	0.046*	63.442	3.841	0
co6	None	0.192*	287.208	15.495	0.0001
	At most 1	0.039*	44.705	3.841	0
co7	None	0.149*	203.832	15.495	0.0001
	At most 1	0.011*	12.875	3.841	0.0003
co8	None	0.190*	404.205	15.495	0.0001
	At most 1	0.045*	71.788	3.841	0
co9	None	0.171*	376.959	15.495	0.0001
	At most 1	0.027*	47.746	3.841	0
co10	None	0.158*	346.692	15.495	0.0001
	At most 1	0.015*	28.418	3.841	0
co11	None	0.399*	177.405	15.495	0.0001
	At most 1	0.035*	11.468	3.841	0.0007
co12	None	0.167*	365.029	15.495	0.0001
	At most 1	0.016*	29.443	3.841	0
co13	None	0.251*	151.064	15.495	0.0001
	At most 1	0.088*	36.515	3.841	0
co14	None	0.207*	391.352	15.495	0.0001

	Hypothesized		Trace	0.050	≥ 0.05
	No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
	At most 1	0.055*	77.318	3.841	0
co15	None	0.190*	304.393	15.495	0.0001
	At most 1	0.009*	12.297	3.841	0.0005
co16	None	0.148*	254.960	15.495	0.0001
	At most 1	0.011*	16.397	3.841	0.0001
co17	None	0.158*	161.739	15.495	0.0001
	At most 1	0.027*	22.176	3.841	0
co18	None	0.198*	159.082	15.495	0.0001
	At most 1	0.079*	43.215	3.841	0
co19	None	0.201*	272.849	15.495	0.0001
	At most 1	0.020*	22.200	3.841	0
co20	None	0.188*	99.557	15.495	0.0001
	At most 1	0.050*	19.562	3.841	0
co21	None	0.157*	177.739	15.495	0.0001
	At most 1	0.024*	21.981	3.841	0
co22	None	0.141*	222.887	15.495	0.0001
	At most 1	0.015*	19.550	3.841	0
co23	None	0.168*	263.380	15.495	0.0001
	At most 1	0.009*	12.795	3.841	0.0003
co24	None	0.140*	274.735	15.495	0.0001
	At most 1	0.014*	24.064	3.841	0
co25	None	0.152*	306.158	15.495	0.0001
	At most 1	0.006*	11.340	3.841	0.0008
co26	None	0.135*	249.197	15.495	0.0001
	At most 1	0.013*	21.073	3.841	0
co27	None	0.165*	234.565	15.495	0.0001
	At most 1	0.036*	39.934	3.841	0
co28	None	0.066*	147.088	15.495	0.0001
	At most 1	0.014*	25.905	3.841	0
co29	None	0.171*	178.915	15.495	0.0001
	At most 1	0.022*	19.001	3.841	0
co30	None	0.150*	258.789	15.495	0.0001
	At most 1	0.016*	22.986	3.841	0
co31	None	0.175*	208.168	15.495	0.0001
	At most 1	0.022*	21.406	3.841	0
co32	None	0.175*	247.280	15.495	0.0001
	At most 1	0.022*	25.727	3.841	0
co33	None	0.247*	265.866	15.495	0.0001
	At most 1	0.050*	40.471	3.841	0
co34	None	0.199*	373.603	15.495	0.0001
	At most 1	0.022*	34.558	3.841	0
co35	None	0.155*	225.601	15.495	0.0001

	Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.050 Critical Value	≥ 0.05 Prob.**
	At most 1	0.030*	34.220	3.841	0
co36	None	0.197*	398.184	15.495	0.0001
	At most 1	0.040*	62.475	3.841	0
co37	None	0.177*	185.914	15.495	0.0001
	At most 1	0.025*	21.655	3.841	0
co38	None	0.158*	327.960	15.495	0.0001
	At most 1	0.014*	24.594	3.841	0
co39	None	0.174*	320.122	15.495	0.0001
	At most 1	0.050*	67.752	3.841	0
co40	None	0.189*	389.140	15.495	0.0001
	At most 1	0.020*	33.852	3.841	0
co41	None	0.198*	448.752	15.495	0.0001
	At most 1	0.030*	53.751	3.841	0
co42	None	0.168*	262.432	15.495	0.0001
	At most 1	0.028*	34.632	3.841	0
co43	None	0.190*	342.983	15.495	0.0001
	At most 1	0.022*	33.282	3.841	0
co44	None	0.239*	368.448	15.495	0.0001
	At most 1	0.043*	51.445	3.841	0
co45	None	0.195*	281.807	15.495	0.0001
	At most 1	0.028*	32.739	3.841	0
co46	None	0.170*	327.886	15.495	0.0001
	At most 1	0.021*	33.704	3.841	0
co47	None	0.112*	171.095	15.495	0.0001
	At most 1	0.036*	40.264	3.841	0
co48	None	0.178*	316.838	15.495	0.0001
	At most 1	0.027*	38.316	3.841	0
co49	None	0.162*	359.161	15.495	0.0001
	At most 1	0.024*	42.749	3.841	0
co50	None	0.208*	297.551	15.495	0.0001
	At most 1	0.033*	37.077	3.841	0
co51	None	0.183*	216.020	15.495	0.0001
	At most 1	0.024*	23.647	3.841	0
co52	None	0.220*	273.000	15.495	0.0001
	At most 1	0.016*	16.871	3.841	0
co53	None	0.196*	319.350	15.495	0.0001
	At most 1	0.013*	17.780	3.841	0
co54	None	0.227*	438.851	15.495	0.0001
	At most 1	0.045*	66.234	3.841	0

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[illegible] Cointegration [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] Liesenfeld (2002) [illegible]

[illegible]

[illegible]

[illegible]

(Johnson Cointegration test)

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	Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.050 Critical Value	≥ 0.05 Prob.**
co1	None	0.158*	342.309	15.495	0.0001
	At most 1	0.017*	31.709	3.841	0
co2	None	0.116*	252.088	15.495	0.0001
	At most 1	0.029*	49.260	3.841	0
co3	None	0.028*	49.822	15.495	0
	At most 1	0.003*	4.152	3.841	0.0416
co4	None	0.021*	43.296	15.495	0
	At most 1	0.009*	12.601	3.841	0.0004
co5	None	0.051*	96.820	15.495	0
	At most 1	0.020*	26.958	3.841	0
co6	None	0.175*	263.099	15.495	0.0001
	At most 1	0.038*	44.256	3.841	0

	Hypothesized		Trace	0.050	≥ 0.05
	No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
co7	None	0.157*	217.795	15.495	0.0001
	At most 1	0.012*	14.846	3.841	0.0001
co8	None	0.173*	374.807	15.495	0.0001
	At most 1	0.046*	74.939	3.841	0
co9	None	0.139*	311.138	15.495	0.0001
	At most 1	0.027*	48.546	3.841	0
co10	None	0.167*	366.355	15.495	0.0001
	At most 1	0.015*	28.407	3.841	0
co11	None	0.995	1760.621	15.495	1
	At most 1	0.036*	11.951	3.841	0.0005
co12	None	0.134*	294.495	15.495	0.0001
	At most 1	0.016*	29.368	3.841	0
co13	None	0.133*	84.223	15.495	0
	At most 1	0.067*	27.495	3.841	0
co14	None	0.194*	369.052	15.495	0.0001
	At most 1	0.055*	76.183	3.841	0
co15	None	0.162*	257.466	15.495	0.0001
	At most 1	0.009*	13.182	3.841	0.0003
co16	None	0.157*	270.831	15.495	0.0001
	At most 1	0.011*	16.074	3.841	0.0001
co17	None	0.092*	101.076	15.495	0.0001
	At most 1	0.027*	22.411	3.841	0
co18	None	0.111*	100.278	15.495	0.0001
	At most 1	0.071*	38.642	3.841	0
co19	None	0.293*	407.125	15.495	0.0001
	At most 1	0.019*	20.931	3.841	0
co20	None	0.132*	71.224	15.495	0
	At most 1	0.043*	16.834	3.841	0
co21	None	0.167*	188.761	15.495	0.0001
	At most 1	0.024*	21.952	3.841	0
co22	None	0.141*	224.768	15.495	0.0001
	At most 1	0.016*	21.117	3.841	0
co23	None	0.087*	137.562	15.495	0.0001
	At most 1	0.011*	14.596	3.841	0.0001
co24	None	0.048*	106.425	15.495	0.0001
	At most 1	0.015*	25.591	3.841	0
co25	None	0.168*	340.878	15.495	0.0001
	At most 1	0.007*	11.705	3.841	0.0006
co26	None	0.164*	302.082	15.495	0.0001
	At most 1	0.014*	21.404	3.841	0
co27	None	0.105*	160.543	15.495	0.0001
	At most 1	0.037*	40.797	3.841	0

	Hypothesized		Trace	0.050	≥ 0.05
	No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
co28	None	0.020*	37.742	15.495	0
	At most 1	0.001	2.126	3.841	0.1448
co29	None	0.093*	103.175	15.495	0.0001
	At most 1	0.023*	19.931	3.841	0
co30	None	0.167*	287.491	15.495	0.0001
	At most 1	0.015*	22.568	3.841	0
co31	None	0.108*	130.319	15.495	0.0001
	At most 1	0.020*	19.917	3.841	0
co32	None	0.081*	121.875	15.495	0.0001
	At most 1	0.022*	25.152	3.841	0
co33	None	0.085*	111.763	15.495	0.0001
	At most 1	0.050*	40.863	3.841	0
co34	None	0.102*	198.368	15.495	0.0001
	At most 1	0.022*	34.408	3.841	0
co35	None	0.081*	128.647	15.495	0.0001
	At most 1	0.029*	33.041	3.841	0
co36	None	0.159*	325.915	15.495	0.0001
	At most 1	0.039*	61.148	3.841	0
co37	None	0.169*	177.863	15.495	0.0001
	At most 1	0.025*	21.418	3.841	0
co38	None	0.086*	184.326	15.495	0.0001
	At most 1	0.014*	25.706	3.841	0
co39	None	0.086*	188.925	15.495	0.0001
	At most 1	0.052*	70.178	3.841	0
co40	None	0.107*	225.431	15.495	0.0001
	At most 1	0.019*	32.711	3.841	0
co41	None	0.098*	234.976	15.495	0.0001
	At most 1	0.028*	50.355	3.841	0
co42	None	0.101*	160.453	15.495	0.0001
	At most 1	0.023*	29.137	3.841	0
co43	None	0.116*	214.335	15.495	0.0001
	At most 1	0.023*	33.397	3.841	0
co44	None	0.104*	177.492	15.495	0.0001
	At most 1	0.042*	50.200	3.841	0
co45	None	0.159*	232.189	15.495	0.0001
	At most 1	0.029*	33.643	3.841	0
co46	None	0.104*	209.152	15.495	0.0001
	At most 1	0.022*	34.931	3.841	0
co47	None	0.035*	41.029	15.495	0
	At most 1	0.002	2.144	3.841	0.1431
co48	None	0.087*	164.738	15.495	0.0001
	At most 1	0.025*	36.036	3.841	0

	Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.050 Critical Value	≥ 0.05 Prob.**
co49	None	0.182*	404.363	15.495	0.0001
	At most 1	0.025*	45.100	3.841	0
co50	None	0.096*	146.165	15.495	0.0001
	At most 1	0.029*	32.902	3.841	0
co51	None	0.085*	104.867	15.495	0.0001
	At most 1	0.020*	19.656	3.841	0
co52	None	0.269*	339.735	15.495	0.0001
	At most 1	0.016*	16.667	3.841	0
co53	None	0.116*	186.226	15.495	0.0001
	At most 1	0.011*	15.915	3.841	0.0001
co54	None	0.119*	238.914	15.495	0.0001
	At most 1	0.038*	56.194	3.841	0

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Granger Causality Test [illegible]

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:Granger Causality [illegible]

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þƑƒĂƵ Ŏ5 ƖþǴöɛ!ƒ LJŊ ƧƤŊ Ĭ ǈƶďžƕ ĂŊ ÜýĂƒþƙ!ƒ Ďžƞơ Ɣƕ˥ƙ Ďžnj˥Ǖƒ þƑƒĂƵ LJŊ ŎǈƶŎ ƒɌNjĂ

Tudor Ƚ˥ƒƧþ yďž Ƚ!5ƒĂƙďž Ƚƞŏƙǉ!ƒ ǉɌNj ƘƇǴƞĂ ÜýĂƒþƙ!ƒ Ďžƞơ Ŏ5 ƖþǴöɛ Ɣƕ˥ƙ Ďžnj˥Ǖƒ

ƘƧǴƬŊ (Ƚŏ!Ǵďž!ƒ ƽƒƧĂǖ! Ƙ˥ƧǴƤĂƕ ƽĂ˥) ĬǁƵ ƘŏƧƞŊ Ŏƙ!ƒĂ and Miron (2009)

ýĂƒþƙ!ƒ Ďžƞơ LJďž Ă ýĂƒþƙ!ƒ Ďžƞơ Ĭ!ǫ þƑƒĂƶ!ƒ LJďž ǉǴƞƙǕƒ ȽŏþǴơŊ Ƚŏƕƕ˥ Ƚpǚ̃Ƶ þĂƞĂ Ĭ!ǫ

Ƙ˥Ƨþ Ŏƙ!ƒĂ Kalbani (2005) Ƚ˥ƒƧþ ƘƇǴƞ ǁ!ɌǂĂ ÜĎžnj˥Ǖƒ þƑƒĂƵ ƘǴƕǁƖƙ Ĭ!ǫ

ȽŏƕǴƞŏƒ Ƚŏƕƕ˥ Ƚpǚ̃Ƶ ƘþƞĂ ƚŏơ Ƚpǚ̃ƶ!ƒ ǉɌNj þǂƋƙ! (Ƚŏ!Ǵďž!ƒ ƽƒƧĂǖ! LJǴďžƵ ȽƮƧĂƕ)

Mubarik and Ƚ˥ƒƧþ ƘƧǴƬŊ Ǵďžǂ ÜýĂƒþƙ!ƒ Ďžƞơ Ĭ!ǫ Ďžnj˥Ǖƒ þƑƒĂƵ LJďž ǋƞƙƙ ȽŏĂp

Ďžƞơ LJŏƕ Ƚŏƕƕ˥ Ƚpǚ̃Ƶ þĂƞĂ Ĭ!ǫ (LJǴƙ˥ǂǴƕ!ƒ) Ŏ5 ƘŏƧƞŊ Ŏƙ!ƒĂ Javid (2009)

Ɣƕ˥ƙ ǴNjƧĂþƕ Ŏƙ!ƒĂ Ďžnj˥Ǖƒ þƑƒĂƵ Ɣƕ˥ŏ ýĂƒþƙ!ƒ Ďžƞơ LJŊ ƚŏơ Ďžnj˥Ǖƒ þƑƒĂƵĂ ýĂƒþƙ!ƒ

.ýĂƒþƙ!ƒ Ďžƞơ

ȽŏĂǈƶďž ăĂƙ˥ďž þǈƵ ȽŏƑǴƮơǫ Ƚ!Ǖþ ƘƒɌ Ƚŏƕƕ˥ Ƚpǚ̃Ƶ þĂƞĂ ǴưŏŊ ýŏǁơƙ!ƒ ƧnjƱƒĂ .Ď

LJďž ǋƞƙƙ Ƚ˥ƒƧþ!ƒ ȽǈŏƵ ƘǴǂƧƬ!ƒ LJďž %ĎČ ǋƙƕ˥ǉ Ǵďžƕ đĐ ýƮŊ LJďž ȽǂƧƬ čč Ŏ5 %đ

ƕƽǘY pƑďžǉ) Ƚŏ!Ǵƙ!ƒ Ƚǁŏþƕ!ƒ ȽŏưƧƽ!ƒ ƯƽƧ Ďžƙŏ˥ ȽŏǁƵĂ Ďžnj˥Ǖƒ þƑƒĂƵ Ĭ!ǫ ýĂƒþƙ!ƒ Ďžƞơ

Ƚǈŏƶ!ƒ Ďžƞơ LJďž %ĔČ ǋƙƕ˥ǉ Ǵďž! (!ǋɛǕɛ ơɘɛNjY Ăǁǁ üNjɛơȽǁɛ !ɰɵ ĎžĎž ǉɰȞ ƕĭǴǴɛ

.ǴnjǉďžǴ%ĎČ ǋƙƕ˥ǉ Ǵďž! Ǵnj!ĂƕpĂ

Ŏùƙ!ƒĂ (ĎČČĔ) LJĂƧƤcĂ ĭþŏƕɛ!ƒ Ƚ˥ƒƧþ ǋƕ ƘƇǴƞ Ǵďž þǂƋƙ! Ƚƞŏƙǉ!ƒ ǉɌNj ƘƇǴƞ ƚŏơ

ǚ̃ŏù!þ þùƞƙ Ďžù! ƚŏơ Ƚŏ!Ǵďž!ƒ ƽƒƧĂǖ! LJǴďžƵ ȽƮƧĂƕ ǴNjþơƒ LJǴǂ ȽŏƕƧƵ ƽƒĂ˥Ŋ ƖþƵ Ƙ˥Ƨþ

ȽùǉŏƵ ƽƒĂù˥Ǖƒ yùŏďžƞ Ŏù5 Ďžnj˥Ǖƒ þƑƒĂƵ Ĭ!ǫ ýĂƒþƙ!ƒ Ďžƞơ LJďž ǋƞƙƙ Ŏƙ!ƒ Ƚŏƕƕ˥!ƒ Ƚpǚ̃ƶǁ!

.Ƚ˥ƒƧþ!ƒ

(Đ-đ) ĎţpƧ ýĂþŋ!ƒ

(Granger Cuaslity test)

ĎźnjʅŨƒ ÞƑƒĂŽĂ ýĂƒþk!ƒ Ďźŋơ LJŏħ ŧŏħħʅ!ƒ ŧpŭz!ƒ

	Null Hypothesis:	F-Statistic	Probability ≥ 0.05
co1	RETURNCO1 does not Granger Cause VOLCO1*	8.678	0.000
	VOLCO1 does not Granger Cause RETURNCO1	0.702	0.622
co2	RETURNCO2 does not Granger Cause VOLCO2	1.441	0.207
	VOLCO2 does not Granger Cause RETURNCO2	0.892	0.485
co3	RETURNCO3 does not Granger Cause VOLCO3*	3.123	0.008
	VOLCO3 does not Granger Cause RETURNCO3	0.959	0.442
co4	RETURNCO4 does not Granger Cause VOLCO4*	2.850	0.014
	VOLCO4 does not Granger Cause RETURNCO4	1.055	0.384
co5	RETURNCO5 does not Granger Cause VOLCO5	1.393	0.224
	VOLCO5 does not Granger Cause RETURNCO5	1.411	0.218
co6	RETURNCO6 does not Granger Cause VOLCO6*	5.399	0.000
	VOLCO6 does not Granger Cause RETURNCO6	1.801	0.110
co7	RETURNCO7 does not Granger Cause VOLCO7	1.849	0.101
	VOLCO7 does not Granger Cause RETURNCO7	1.189	0.312
co8	RETURNCO8 does not Granger Cause VOLCO8	1.738	0.123
	VOLCO8 does not Granger Cause RETURNCO8	0.830	0.529
co9	RETURNCO9 does not Granger Cause VOLCO9*	2.827	0.015
	VOLCO9 does not Granger Cause RETURNCO9	0.657	0.656
co10	RETURNCO10 does not Granger Cause VOLCO10	0.378	0.864
	VOLCO10 does not Granger Cause RETURNCO10	0.491	0.783
co11	RETURNCO11 does not Granger Cause VOLCO11*	2.859	0.015
	VOLCO11 does not Granger Cause RETURNCO11	1.333	0.250
co12	RETURNCO12 does not Granger Cause VOLCO12*	5.953	0.000
	VOLCO12 does not Granger Cause RETURNCO12	0.719	0.609
co13	RETURNCO13 does not Granger Cause VOLCO13	1.047	0.389
	VOLCO13 does not Granger Cause RETURNCO13	1.039	0.394
co14	RETURNCO14 does not Granger Cause VOLCO14*	2.626	0.023
	VOLCO14 does not Granger Cause RETURNCO14	0.840	0.521
co15	RETURNCO15 does not Granger Cause VOLCO15*	9.239	0.000
	VOLCO15 does not Granger Cause RETURNCO15*	2.346	0.039
co16	RETURNCO16 does not Granger Cause VOLCO16*	7.380	0.000
	VOLCO16 does not Granger Cause RETURNCO16	1.522	0.180
co17	RETURNCO17 does not Granger Cause VOLCO17	1.569	0.166
	VOLCO17 does not Granger Cause RETURNCO17	0.934	0.458
co18	RETURNCO18 does not Granger Cause VOLCO18	1.430	0.212
	VOLCO18 does not Granger Cause RETURNCO18*	3.164	0.008

	Null Hypothesis:	F-Statistic	Probability ≥ 0.05
co19	RETURNCO19 does not Granger Cause VOLCO19*	3.772	0.002
	VOLCO19 does not Granger Cause RETURNCO19	1.871	0.097
co20	RETURNCO20 does not Granger Cause VOLCO20	0.615	0.688
	VOLCO20 does not Granger Cause RETURNCO20	2.063	0.069
co21	RETURNCO21 does not Granger Cause VOLCO21	1.772	0.116
	VOLCO21 does not Granger Cause RETURNCO21	0.184	0.969
co22	RETURNCO22 does not Granger Cause VOLCO22*	5.679	0.000
	VOLCO22 does not Granger Cause RETURNCO22	1.132	0.341
co23	RETURNCO23 does not Granger Cause VOLCO23*	6.576	0.000
	VOLCO23 does not Granger Cause RETURNCO23	0.739	0.595
co24	RETURNCO24 does not Granger Cause VOLCO24*	6.001	0.000
	VOLCO24 does not Granger Cause RETURNCO24	0.570	0.723
co25	RETURNCO25 does not Granger Cause VOLCO25*	6.875	0.000
	VOLCO25 does not Granger Cause RETURNCO25	1.129	0.343
co26	RETURNCO26 does not Granger Cause VOLCO26*	6.312	0.000
	VOLCO26 does not Granger Cause RETURNCO26	1.674	0.138
co27	RETURNCO27 does not Granger Cause VOLCO27*	4.330	0.001
	VOLCO27 does not Granger Cause RETURNCO27	1.261	0.278
co28	RETURNCO28 does not Granger Cause VOLCO28*	6.404	0.000
	VOLCO28 does not Granger Cause RETURNCO28	0.320	0.901
co29	RETURNCO29 does not Granger Cause VOLCO29*	3.836	0.002
	VOLCO29 does not Granger Cause RETURNCO29*	2.799	0.016
co30	RETURNCO30 does not Granger Cause VOLCO30*	9.157	0.000
	VOLCO30 does not Granger Cause RETURNCO30	0.616	0.687
co31	RETURNCO31 does not Granger Cause VOLCO31*	3.288	0.006
	VOLCO31 does not Granger Cause RETURNCO31	0.306	0.910
co32	RETURNCO32 does not Granger Cause VOLCO32*	2.690	0.020
	VOLCO32 does not Granger Cause RETURNCO32*	4.573	0.000
co33	RETURNCO33 does not Granger Cause VOLCO33*	4.140	0.001
	VOLCO33 does not Granger Cause RETURNCO33	1.357	0.238
co34	RETURNCO34 does not Granger Cause VOLCO34*	14.169	0.000
	VOLCO34 does not Granger Cause RETURNCO34	1.773	0.115
co35	RETURNCO35 does not Granger Cause VOLCO35*	5.322	0.000
	VOLCO35 does not Granger Cause RETURNCO35	0.568	0.725
co36	RETURNCO36 does not Granger Cause VOLCO36	1.024	0.402
	VOLCO36 does not Granger Cause RETURNCO36	2.205	0.051
co37	RETURNCO37 does not Granger Cause VOLCO37	0.746	0.589
	VOLCO37 does not Granger Cause RETURNCO37	1.970	0.081
co38	RETURNCO38 does not Granger Cause VOLCO38*	10.304	0.000
	VOLCO38 does not Granger Cause RETURNCO38	0.941	0.453
co39	RETURNCO39 does not Granger Cause VOLCO39*	5.169	0.000
	VOLCO39 does not Granger Cause RETURNCO39*	2.708	0.019
co40	RETURNCO40 does not Granger Cause VOLCO40*	13.240	0.000

	Null Hypothesis:	F-Statistic	Probability ≥ 0.05
	VOLCO40 does not Granger Cause RETURNCO40	1.332	0.248
co41	RETURNCO41 does not Granger Cause VOLCO41*	3.176	0.007
	VOLCO41 does not Granger Cause RETURNCO41	1.104	0.356
co42	RETURNCO42 does not Granger Cause VOLCO42*	2.279	0.045
	VOLCO42 does not Granger Cause RETURNCO42	1.422	0.214
co43	RETURNCO43 does not Granger Cause VOLCO43*	3.668	0.003
	VOLCO43 does not Granger Cause RETURNCO43	1.096	0.361
co44	RETURNCO44 does not Granger Cause VOLCO44*	6.428	0.000
	VOLCO44 does not Granger Cause RETURNCO44*	3.791	0.002
co45	RETURNCO45 does not Granger Cause VOLCO45*	4.940	0.000
	VOLCO45 does not Granger Cause RETURNCO45	1.725	0.126
co46	RETURNCO46 does not Granger Cause VOLCO46*	8.690	0.000
	VOLCO46 does not Granger Cause RETURNCO46*	2.224	0.050
co47	RETURNCO47 does not Granger Cause VOLCO47*	2.014	0.074
	VOLCO47 does not Granger Cause RETURNCO47	0.945	0.451
co48	RETURNCO48 does not Granger Cause VOLCO48*	9.526	0.000
	VOLCO48 does not Granger Cause RETURNCO48*	2.682	0.020
co49	RETURNCO49 does not Granger Cause VOLCO49*	4.027	0.001
	VOLCO49 does not Granger Cause RETURNCO49*	2.495	0.029
co50	RETURNCO50 does not Granger Cause VOLCO50*	6.708	0.000
	VOLCO50 does not Granger Cause RETURNCO50	0.991	0.422
co51	RETURNCO51 does not Granger Cause VOLCO51	0.697	0.625
	VOLCO51 does not Granger Cause RETURNCO51*	3.034	0.010
co52	RETURNCO52 does not Granger Cause VOLCO52	1.836	0.103
	VOLCO52 does not Granger Cause RETURNCO52	0.663	0.652
co53	RETURNCO53 does not Granger Cause VOLCO53*	8.269	0.000
	VOLCO53 does not Granger Cause RETURNCO53*	3.162	0.008
co54	RETURNCO54 does not Granger Cause VOLCO54*	2.389	0.036
	VOLCO54 does not Granger Cause RETURNCO54*	1.588	0.160

[illegible]

[illegible]

[illegible] (Granger Causality test) [illegible]

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Ǒùƙ!f Mahajan and Singh (2008) ƗùʅfƧþ ƘþηĂ þǀ5 ǁ!Ȓ ǇĴdž Σƫƶ!f ĬǘƵĂ

ǗöùǃþƗöƗöƧdžǕ̄f ǀþơƙdž!f ƘƓöŬĂ!f Ǒ5 National Stock Exchange (NSE) ƫĂʅ ƘʅƧþ

Ɠư ùöĎ ƘþùηĂ Ɨöơ ÜþƑfĂƶ!f ƔǘŀƙĬ!ƍ ýĂfþƙ!f Ďĭηơ ǇĴdž ǉjƓηƙǕf ƗǒþƓơĎ Ɨǒhhʅ!f ƗþűƵ!f ĬǘƵ

ƗùþűƵ!f ĬǘƵ ƓöĂp Ǘö!þ ƧĂhdž!ǓfĂƫ ƫĂʅ ƘʅƧþ Ǒƙ!f Nor and Cheong (2007) ƋʅfƧþ

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(đ-đ) ÐþƧ ýĂβη

(Granger Cuaslity test)

ÐžnjٱŰf βFfĂƵ ₭ĜhWlkĂ ýĂfβk!f Ðžηơ LJŏh Łŏhhvٱ!f Łpŭƶ!f

	Null Hypothesis:	F-Statistic	Probability ≥ 0.05
co1	VOTCO1 does not Granger Cause VOLCO1	0.849	0.515
	VOLCO1 does not Granger Cause VOTCO1*	8.286	0.000
co2	VOTCO2 does not Granger Cause VOLCO2	0.492	0.782
	VOLCO2 does not Granger Cause VOTCO2	1.001	0.416
co3	VOTCO3 does not Granger Cause VOLCO3	0.808	0.544
	VOLCO3 does not Granger Cause VOTCO3	1.176	0.319
co4	VOTCO4 does not Granger Cause VOLCO4	2.326	0.041
	VOLCO4 does not Granger Cause VOTCO4	1.341	0.244
co5	VOTCO5 does not Granger Cause VOLCO5	0.234	0.948
	VOLCO5 does not Granger Cause VOTCO5	1.286	0.267
co6	VOTCO6 does not Granger Cause VOLCO6	0.866	0.503
	VOLCO6 does not Granger Cause VOTCO6	0.834	0.525
co7	VOTCO7 does not Granger Cause VOLCO7	1.171	0.321
	VOLCO7 does not Granger Cause VOTCO7	0.765	0.575
co8	VOTCO8 does not Granger Cause VOLCO8	0.068	0.997
	VOLCO8 does not Granger Cause VOTCO8	1.038	0.394
co9	VOTCO9 does not Granger Cause VOLCO9	0.588	0.710
	VOLCO9 does not Granger Cause VOTCO9	1.747	0.121
co10	VOTCO10 does not Granger Cause VOLCO10	0.214	0.957
	VOLCO10 does not Granger Cause VOTCO10	0.897	0.482
co11	VOTCO11 does not Granger Cause VOLCO11	1.313	0.258
	VOLCO11 does not Granger Cause VOTCO11	1.811	0.110
co12	VOTCO12 does not Granger Cause VOLCO12*	2.451	0.032
	VOLCO12 does not Granger Cause VOTCO12*	5.550	0.000
co13	VOTCO13 does not Granger Cause VOLCO13	1.249	0.285
	VOLCO13 does not Granger Cause VOTCO13	0.913	0.473
co14	VOTCO14 does not Granger Cause VOLCO14	0.208	0.959
	VOLCO14 does not Granger Cause VOTCO14	1.914	0.089
co15	VOTCO15 does not Granger Cause VOLCO15	0.696	0.627
	VOLCO15 does not Granger Cause VOTCO15	0.529	0.754
co16	VOTCO16 does not Granger Cause VOLCO16	0.851	0.514
	VOLCO16 does not Granger Cause VOTCO16*	2.564	0.026
co17	VOTCO17 does not Granger Cause VOLCO17	0.630	0.677
	VOLCO17 does not Granger Cause VOTCO17*	2.398	0.036
co18	VOTCO18 does not Granger Cause VOLCO18*	2.223	0.051
	VOLCO18 does not Granger Cause VOTCO18	1.110	0.354

	Null Hypothesis:	F-Statistic	Probability ≥ 0.05
co19	VOTCO19 does not Granger Cause VOLCO19	2.174	0.055
	VOLCO19 does not Granger Cause VOTCO19	0.467	0.801
co20	VOTCO20 does not Granger Cause VOLCO20	1.107	0.356
	VOLCO20 does not Granger Cause VOTCO20	0.661	0.653
co21	VOTCO21 does not Granger Cause VOLCO21	0.335	0.892
	VOLCO21 does not Granger Cause VOTCO21	1.521	0.181
co22	VOTCO22 does not Granger Cause VOLCO22	1.679	0.136
	VOLCO22 does not Granger Cause VOTCO22*	2.512	0.028
co23	VOTCO23 does not Granger Cause VOLCO23*	3.406	0.005
	VOLCO23 does not Granger Cause VOTCO23	1.147	0.334
co24	VOTCO24 does not Granger Cause VOLCO24	1.254	0.282
	VOLCO24 does not Granger Cause VOTCO24	0.241	0.944
co25	VOTCO25 does not Granger Cause VOLCO25	1.597	0.158
	VOLCO25 does not Granger Cause VOTCO25	1.229	0.293
co26	VOTCO26 does not Granger Cause VOLCO26	0.461	0.805
	VOLCO26 does not Granger Cause VOTCO26	1.444	0.205
co27	VOTCO27 does not Granger Cause VOLCO27*	3.796	0.002
	VOLCO27 does not Granger Cause VOTCO27	1.613	0.154
co28	VOTCO28 does not Granger Cause VOLCO28*	5.128	0.000
	VOLCO28 does not Granger Cause VOTCO28	0.457	0.809
co29	VOTCO29 does not Granger Cause VOLCO29	1.014	0.408
	VOLCO29 does not Granger Cause VOTCO29	1.100	0.359
co30	VOTCO30 does not Granger Cause VOLCO30*	2.331	0.040
	VOLCO30 does not Granger Cause VOTCO30	0.831	0.527
co31	VOTCO31 does not Granger Cause VOLCO31	1.177	0.319
	VOLCO31 does not Granger Cause VOTCO31	0.582	0.714
co32	VOTCO32 does not Granger Cause VOLCO32*	2.333	0.040
	VOLCO32 does not Granger Cause VOTCO32	0.868	0.502
co33	VOTCO33 does not Granger Cause VOLCO33*	4.373	0.001
	VOLCO33 does not Granger Cause VOTCO33	1.405	0.220
co34	VOTCO34 does not Granger Cause VOLCO34*	2.990	0.011
	VOLCO34 does not Granger Cause VOTCO34*	2.254	0.047
co35	VOTCO35 does not Granger Cause VOLCO35	1.014	0.408
	VOLCO35 does not Granger Cause VOTCO35	0.848	0.515
co36	VOTCO36 does not Granger Cause VOLCO36	1.806	0.109
	VOLCO36 does not Granger Cause VOTCO36	1.058	0.382
co37	VOTCO37 does not Granger Cause VOLCO37	0.530	0.754
	VOLCO37 does not Granger Cause VOTCO37	0.945	0.451
co38	VOTCO38 does not Granger Cause VOLCO38*	8.651	0.000
	VOLCO38 does not Granger Cause VOTCO38*	5.785	0.000

	Null Hypothesis:	F-Statistic	Probability ≥ 0.05
co39	VOTCO39 does not Granger Cause VOLCO39*	2.354	0.039
	VOLCO39 does not Granger Cause VOTCO39	0.041	0.999
co40	VOTCO40 does not Granger Cause VOLCO40	2.016	0.074
	VOLCO40 does not Granger Cause VOTCO40*	3.484	0.004
co41	VOTCO41 does not Granger Cause VOLCO41*	5.574	0.000
	VOLCO41 does not Granger Cause VOTCO41	0.976	0.431
co42	VOTCO42 does not Granger Cause VOLCO42*	5.272	0.000
	VOLCO42 does not Granger Cause VOTCO42*	3.968	0.001
co43	VOTCO43 does not Granger Cause VOLCO43	2.022	0.073
	VOLCO43 does not Granger Cause VOTCO43	2.011	0.074
co44	VOTCO44 does not Granger Cause VOLCO44*	2.907	0.013
	VOLCO44 does not Granger Cause VOTCO44	0.416	0.838
co45	VOTCO45 does not Granger Cause VOLCO45	0.949	0.449
	VOLCO45 does not Granger Cause VOTCO45*	2.270	0.046
co46	VOTCO46 does not Granger Cause VOLCO46*	3.053	0.010
	VOLCO46 does not Granger Cause VOTCO46*	3.006	0.010
co47	VOTCO47 does not Granger Cause VOLCO47	0.501	0.776
	VOLCO47 does not Granger Cause VOTCO47	1.061	0.381
co48	VOTCO48 does not Granger Cause VOLCO48*	5.283	0.000
	VOLCO48 does not Granger Cause VOTCO48	0.850	0.514
co49	VOTCO49 does not Granger Cause VOLCO49*	3.279	0.006
	VOLCO49 does not Granger Cause VOTCO49*	5.900	0.000
co50	VOTCO50 does not Granger Cause VOLCO50*	5.627	0.000
	VOLCO50 does not Granger Cause VOTCO50	1.200	0.307
co51	VOTCO51 does not Granger Cause VOLCO51*	2.838	0.015
	VOLCO51 does not Granger Cause VOTCO51*	3.506	0.004
co52	VOTCO52 does not Granger Cause VOLCO52	0.961	0.441
	VOLCO52 does not Granger Cause VOTCO52*	3.978	0.001
co53	VOTCO53 does not Granger Cause VOLCO53*	4.474	0.000
	VOLCO53 does not Granger Cause VOTCO53*	3.862	0.002
co54	VOTCO54 does not Granger Cause VOLCO54*	3.093	0.009
	VOLCO54 does not Granger Cause VOTCO54	0.869	0.501

(VEC) Vector Error Correction Model ϸƑƠƗƢƐƉ- č -Đ

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ƚùǉöƵ ƘǴǂƧƬ!ƒ ỳödžη Ŏ5 Ŏ!Ǵơ!ƒ ǅĂŏ!ƒ ýĂƒþƙ ǅηơĂ ƭƕǴƪ!ƒ ǅĂŏ!ƒ ýĂƒþƙ ǅηơ ǇŏƕǴdž ƚŏƑǴƮơ

ùù!ƒ ƘǴǂƧƬ!ƒ ỳödžη Ŏ5 (t-statistic) ù !ƚl ƱdžƘ!ƒ ƚdžŏl!ƒ ǇƊ ƚŏơ Ü%čČČ ƚƕƪǉƕĂ ƚƪƒƧþ!ƒ

ỳödžη Ŏ5 ƚŏƕ ƪ ƘǉǴǂ ƚþǘz!ƒ ǉƦǋ ǇǴ5 ǁ!Ʀ Ĭ!ǫ ƚ5Ǵư ÚǴƕ Ü(Ď,đ) ĭĂǴƪŏ ĂƊ Ƨƕǂƒ ƘǉǴǂ (đĐ)

.ƘǴǂƧƬ!ƒ

ǅĂùŏ!ƒ ýĂƒþùƙ ǅηơ lþǴŏƨ Ĭ!ǫ ĭþƌŏ ƭƕǴƪ!ƒ ǅĂŏ!ƒ ýĂƒþƙ ǅηơ ƯǴ5Ƥǉƒ ǇƊ Ŏǉzŏ ƒƦǋĂ

.ƠŏơƮ Σǂz!ƒĂ Ŏ!Ǵơ!ƒ

VOL-) ǇŏdžĂŏ ýƕp Ǵdž ýĂƒþƙ ǅηơĂ Ŏ!Ǵơ!ƒ ǅĂŏ!ƒ ýĂƒþƙ ǅηơĂ ǇŏƕƚŏǂŏdžǴǈöþ!ƒ ƚþǘz!ƒ -Ɣ

.(2 and VOL

ƚù!Ǘþ ƘƒƦ ýùηǕƒ lƧŏƮp ƚŏǂŏdžǴǈöþ ƚþǘƵ ǁǴǉǋ ǇƊ (VEC) ƧǴƙƤƒ ƝƑǴƙǉ ƘƧnjƱƊ

ƚùǉöƵ ƘǴǂƧƬ ỳödžη Ŏ5 Ŏ!Ǵơ!ƒ ǅĂŏ!ƒ ýĂƒþƙ ǅηơĂ ǇŏdžĂŏ ýƕp Ǵdž ýĂƒþƙ ǅηơ ǇŏƕǴdž ƚŏƑǴƮơ

ùù!ƒ ƘǴǂƧƬ!ƒ ỳödžη Ŏ5 (t-statistic) ù !ƚl ƱdžƘ!ƒ ƚdžŏl!ƒ ǇƊ ƚŏơ Ü%čČČ ƚƕƪǉƕĂ ƚƪƒƧþ!ƒ

yǒdžŋ Ŏ5 Ŧǒhǚl ƘǉǴŧ ŧpǘz!f ǉŖǊ ǇǴ5 ǁ!Ŗ Ĭ!ǫ Ŧ5Ǵưǘǵ Ü(Ď,đ) ĭĂǴlǒ ĂD Ƨhŧf ƘǉǴŧ (đĐ)

.ƘǴŧƧT!f

høsǘY pƑødžǉ) Ŧùǒ!Ǵk!f Ŧǚǒƥh!f Ŧǒư Ƨs!f ýĂhp DžǩǒƖ (Ɣ Ü D) Ŏ5 Džƥlk Ǵdž ĬǚƵ ƒCǴǉhĂ

ƘǴŧƧùT yùǒdžŋ! (5ǴƑƨǁƐ üǋƐǭŦǁƐ !ШΘ Ǌ ĬǁƑΘǁƐ üǋƐǭŦǁƐ !ШΘ DžĩǴ üШǗƐ Yƥĭ Ƭ5 hǔlĭDžƑdžĩǭ

.Ŧǉǒz!f

DžĂùǒ!f ýĂƒƥùk Džŋơ YǴ5kƧf Ĭ!ǫ ĭƥƋǒ ǇǒdžĂǒ ýhp Ǵdž ýĂƒƥk Džŋơ ƯǴ5Ƥǉf ǇǴ5 ŦǒǚƵĂ

ýĂƒƥùk!f DžǴùŋơD Ĭ!ǫ YĂŋƧ!f ýǖƤ ǇǊdž Ŏǚhlkldž!f ýĂƒƥk!f Džŋơh ČĂhk!f ǇŧdžǒŦǒơh ÜǑ!Ǵơ!f

ƨĂùƖ ƘùƖƧƥ Ŏk!fĂ Lu and Lin (2010)ŦƖƒƧƥ ǋƑǴkǉ ƥŧƋk! ǋƑǴkǉ!f ǉŖǊ ƘCǴŋĂ ÜŦlhǴƖ!f

Ŏ5 ƒƧǒhŧ ƒƧǒǩƋk ƧǩƋk ŦlhǴƖ!f ƘǴhǚlk!fĂ ýĂƒƥk!f DžǴŋơD ǇD ƘƥŋĂ Ŏk!fĂ Ŧǒ!Ǵdž!f ƨƒƧĂǖ! ǇƒĂǒǴk

.Ŧǒ!Ǵơ!f ƥƑƒĂz!f ƘǴhǚlkĂ ýĂƒƥk!f DžǴŋơD

ƨhǴƖù!f DžĂùǒ!f DžǌùƖD ƥùƑƒĂƵĂ Ŏ!Ǵùơ!f DžĂǒ!f ýĂƒƥk DžŋơĂ Ǉǒh ŦǒŧǒdžǴǉǒƥ!f Ŧpǘz!f - Ƙ

.(Return-1 and VOL)

ƥùƑƒĂƵ Ǉǒh ýŋǕf lƧǒƮp ŦǒŧǒdžǴǉǒƥ ŦpǘƵ ƥŋĂǒ Ǖ ǊǉfYVEC) ƧǴhƤf ǋƑǴkǉ ƘƧǌƱD

Ʊùl5 ŦǒƑǴƮơǫ Ŧ!Ǚƥ ĂŖ ƘǉǴŧ Ŧpǘz!f ǉŖǊ ǇD ŧǒơ ÜǑ!Ǵơ!f DžĂǒ!f ýĂƒƥk Džŋơ Ă ƨhǴƖ!f DžĂǒ!f

ùùǚ! Ŧùlǚdž!f Ŧdžǒl!f ǇD ŧùùǒơ ÜŦùƖƒƧƥ!f ŦùǉǒƵ ǇùǒdžƘ %ĕ ǋkhƖǉ Ǵdžh ĭD ƘǴŧƧT đ Ŏ5

ǴùǌƶǒdžŋƘǴŧƧTù!f ǉŖùǋĂ Ʊl5 ƘǴŧƧT (đ) Ŏ5 (Ď,đ) ĭĂǴlǒ ĂD Ƨhŧf ƘǉǴŧ (t-statistic)

.ŦǒhǚƖ Ǵǌǒ5 Ŧpǘz!f ƘǉǴŧ

ǇǒdžĂùǒ ýùhp Ǵùdž DžǌùƖD ƥùƑƒĂƵĂ Ŏ!Ǵơ!f DžĂǒ!f ýĂƒƥk Džŋơ Ǉǒh ŦǒŧǒdžǴǉǒƥ!f Ŧpǘz!f - ŧ

.(Return-2 and VOL)

þùƑfĂƵ ǈǑǜ ýɳǕ̄f ƖƧŏƮp Ŧŏǂŏdžǵǉöþ ŦpǖƵ þɳĂŏ Ǖ ǋǉf (VEC) ƧǵǜƤf ǋƑǵǈǉ ƘƧǌƱǅ

Ŧù!Ǔþ ĂƦ ƘùǉǴǂ Ŧùpǖz!f ǉƦùǋ Ǉǅ Ŧ ŏơ ÜǑ!Ǵơ!f ǅĂŏ!f ýĂfþǩ ǅɳơ Ă ǇŏdžĂŏ ýǜp Ǵdž! ǅǌƪǕ̄f

Ŧù lǅƱdž!f Ŧùdžŏl!f ǇǅŦ ŏơ ÜŦƪfƧþ!f ŦǉöƵ ǇdžŸ %ĕ ǋǩǜƪǉ Ǵdžǜ ĭǅ ƘǴǂƧT đ Ŏ5 Ʊl5 ŦŏƑǴƮơƍ

Ŧùpǖz!f ǉƦùǋ ƘǉǴǂĂ ÜƱl5 ƘǴǂƧT (đ) Ŏ5 (Ď,đ) ĭĂǴƪŏ Ăǅ Ƨǜǂf ƘǉǴǂ (t-statistic) ùǅ!

.%ĎČ ǋǩǜƪǉ Ǵdžǜ lþơfĂ ŦǂƧT Ŏ5 Ŧŏǜǅƪ Ă %ĚČ ǋǩǜƪǉ Ǵdžǜ ƘǴǂƧT (Đ) Ŏ5 ŦŏǜǴɳŏf

pƑdžǉj) Ŧŏ!Ǵǩ!f Ŧǅŏþǜ!f Ŧŏư Ƨ5!f Ư5Ƨ ǅǩŏƪ (Ŧ ÜƘ) ǇŏǩƧl5!f Ŏ5 ǅþlǩ Ǵdž ĬǅƵ fǴǴǉǜĂ

ƍƟƐǋYǋ ĬǁƑƟǁƐ üǋƐƍŦǁƐ !ШƟ ǅĭǴ ǜĭƟƑTƟƋ ǜǁǗƍ lƐP üШǗƐ ƔþĭTƽ ǜĭlĭǅƑdžĭƍ ǜƽǘY

.(ǜƨǴƑƨǁƐ !ǋƨǗƐ)

ШǗ-   ǿpǖz!f Ŧŏǂŏdžǵǉöþ!f ǇŏǜǂþƑfĂƵ ǅǌƪǅ ǅĂŏ!f Ŏ!Ǵơ!f ǅɳơĂ ýĂfþǩ ǅĂŏ!f ƪ!ǴǜƪƨƖ VOL-1)

.(and Return

Ŧù!Ǔþ ƘfƦ ýɳǕ̄f ƖƧŏƮp Ŧŏǂŏdžǵǉöþ ŦpǖƵ þɳĂŏ Ǖ ǋǉǅ (VEC) ƧǵǜƤf ǋƑǵǈǉ ƘƧǌƱǅ

Ŧ!Ǔþ ƘfƦ Ŧpǖz!f ǉƦǋ ǇǅŦ ŏơ ÜƨǜǴƪ!f ǅĂŏ!f ýĂfþǩ ǅɳơĂ Ŧŏ!Ǵơ!f ǅǌƪǕ̄f þƑfĂƵ ǇŏǜŦŏƑǴƮơƍ

Ŏ5 ŦǜɳĂdž Ŧpǖz!f ǉƦǋ ƘǉǴǂĂ ÜŦǉöz!f ǅɳơ Ǉdž %ē ǋǩǜƪǉ Ǵdžǜ Ʊl5 ƘǴǂƧT (Đ) Ŏ5 ŦŏƑǴƮơƍ

Ŧùpǖz!f ǇǅŦ ùŏơÜ %ēđ ǋǩǜƪǉ Ǵdžǜ ƘǴǂƧT (ď) Ŏ5 Ŧŏǜǅƪ Ă %Ďđ ǋǩǜƪǉ Ǵdžǜ lþơfĂ ŦǂƧT

.(Ď,đ) ĭĂǴƪǩ Ăǅ Ƨǜǂf ŦlǅƱdž!f (t-statistic) Ŧdžŏp ǇĂǂǩ ǴdžþǉƵ ŦŏƑǴƮơƍ Ŧ!Ǔþ ƘfƦ ǇĂǂǩ

ƟƟ-   Ŧpǖz!f Ŧŏǂŏdžǵǉöþ!f ǇŏǜǂþƑfĂƵ ǅǌƪǅ ǅĂŏ!f Ŏ!Ǵơ!f ǅɳơĂ ýĂfþǩ Ǵdž ýǜp ǇŏdžĂùŏ VOL-)

.(2 and Return

Ŧù!Ǔþ ƘfƦ ýɳǕ̄f ƖƧŏƮp Ŧŏǂŏdžǵǉöþ ŦpǖƵ þɳĂŏ Ǖ ǋǉǅ (VEC) ƧǵǜƤf ǋƑǵǈǉ ƘƧǌƱǅ

ƘfƦ Ŧùpǖz!f ǉƦùǋ ǇǅŦ ŏơ ÜǇŏdžĂŏ ýǜp Ǵdž ýĂfþǩ ǅɳơĂ Ŧŏ!Ǵơ!f ǅǌƪǕ̄f þƑfĂƵ ǇŏǜŦŏƑǴƮơƍ

[illegible] %Đ [illegible]

(t- [illegible]

.(Ď,đ) [illegible] statistic)

[illegible] (Θ [illegible]) [illegible]

[illegible]

.([illegible]

[illegible] Mubarik and Javid (2009) [illegible]

.[illegible]

([illegible]) [illegible] Darwish (2011) [illegible]

[illegible]

.[illegible]

Return-) [illegible] -[illegible]

.(1 and Return

[illegible] (VEC) [illegible]

[illegible]

(ē) [illegible] %čě [illegible] (čČ) [illegible]

[illegible] %ďČ [illegible] (ď) [illegible] %ēČ [illegible]

.(Ď,đ) [illegible] (t-statistic) [illegible]

[illegible] -[illegible]

.(Return-2 and Return)

Ɨù!Ǚþ ƘƒƦ ýηǕƒ lƧŏƮp Ɨŏǂŏdžǥǉŏþ ƗpǚƵ þηĂŏ Ǚ ǋǉǇ (VEC) ƧǤǊƤƒ ƝƑǤǉ ƘƧǌǓǇ

ƘƒƦ Ɨùpǚz!ƒ ǉƦǋ ǇǇ Ɨŏơ ÜǇǇŏdžĂŏ ýǊp ǤdžǃǊǌƪǕƒ þƑƒĂƵĂ Ɨŏ!ǤơƒǊǌƪǕƒ þƑƒĂƵ ǇǇŏǊ ƗŏƑǤƮơ

ƗùǊηĂdž ƗpǚzƗ ǉƦǋ ƘǉǤǂĂ ÜƗǉŏz!ƒ ǊηơǇǇdž %čē ǋǊƪǉ ǤdžǊ ƘǤǂƧT (ĕ) Ŏ5 ƗŏƑǤƮơ Ɨ!Ǚþ

Ɨùpǚz!ƒ ǇǇ Ɨŏơ Ü%ĐĐ ǋǊƪǉ ǤdžǊ ƘǤǂƧT (Đ) Ŏ5 ƗǊ!Ǥƪ Ă %đĒ ǋǊƪǉ ǤdžǊ ƘǤǂƧT (đ) Ŏ5

.(Ď,đ) ĭĂǤƪǩ ĂǇ ƧǊǂƒ ƗǀƱdž!ƒ (t-statistic) Ɨdžŏp ǇĂǂǩ ǤdžþǉƵ ƗŏƑǤƮơ Ɨ!Ǚþ ƘƒƦ ǇĂǂǩ

pƑødžǉ) Ɨùŏ!Ǥǩ!ƒ ƗǀŏþǊ!ƒ Ɨŏư Ƨƽ!ƒ Ư5Ƨ ǊǩŏƪǓ (þ ÜǇ) ǇŏǩƧǀƽ!ƒ Ŏ5 ǊþǀǩǤdž ĬǀƵ ƒǤǤǉǊĂ

!ǋƨǙƐ ơǝƐǌYǌ ǊĭǁƑƟǁƐ !ǋƨǙƐ ơǝƐǌY ǊĭǤ ǊĭǝƑƮƟ ǊǁǙơ l ƐƤ üǕǙƐ ɣþĭƬƽ ǊĭǀĭǊƑǊĭơ ǊƽűY

.(ǊƨǤƑ ƨǁƐ)

(Ē-đ) ǍǏ ýĂþŋ!ƒ

(Vector Error Corection Model)

ǍǏǹʅŰƒ þƑƒĂŽĂ ýĂƒþķ!ƒ ǍŋơǈǑǒ ŧŏǂǒǆǇǉþ!ƒ ŧþǖz!ƒ

	Error Correction:	D(VOL)	D (RETURN)		Error Correction:	D(VOL)	D (RETURN)
co1	D(VOLCO1(-1))	-0.542*	0.000	**co8**	D(VOLCO8(-1))	-0.575*	0.001
	D(VOLCO1(-2))	-0.226*	-0.001		D(VOLCO8(-2))	-0.247*	0.001
	D(RETURNCO1(-1))	0.384	0.019		D(RETURNCO8(-1))	1.983	0.043
	D(RETURNCO1(-2))	0.897	0.030		D(RETURNCO8(-2))	1.500	-0.027
co2	D(VOLCO2(-1))	-0.546*	0.001	**co9**	D(VOLCO9(-1))	-0.599*	-0.001
	D(VOLCO2(-2))	-0.266*	0.001		D(VOLCO9(-2))	-0.328*	-0.001
	D(RETURNCO2(-1))	1.770	0.089*		D(RETURNCO9(-1))	0.332	-0.009
	D(RETURNCO2(-2))	0.677	0.050		D(RETURNCO9(-2))	0.905	-0.052
co3	D(VOLCO3(-1))	-0.638*	0.000	**co10**	D(VOLCO10(-1))	-0.524*	0.003
	D(VOLCO3(-2))	-0.259*	0.001		D(VOLCO10(-2))	-0.284*	0.000
	D(RETURNCO3(-1))	0.049	-0.086		D(RETURNCO10(-1))	-0.015	0.033
	D(RETURNCO3(-2))	-0.493	-0.021		D(RETURNCO10(-2))	0.047	0.002
co4	D(VOLCO4(-1))	-0.554*	0.000	**co11**	D(VOLCO11(-1))	-0.664*	0.000
	D(VOLCO4(-2))	-0.265*	0.002		D(VOLCO11(-2))	-0.318*	-0.001
	D(RETURNCO4(-1))	-0.203	0.047		D(RETURNCO11(-1))	-0.141	0.003
	D(RETURNCO4(-2))	0.502	0.008		D(RETURNCO11(-2))	1.263	0.001
co5	D(VOLCO5(-1))	-0.560*	0.001	**co12**	D(VOLCO12(-1))	-0.555*	0.000
	D(VOLCO5(-2))	-0.302*	0.001		D(VOLCO12(-2))	-0.264*	0.002
	D(RETURNCO5(-1))	1.092	0.041		D(RETURNCO12(-1))	0.756	0.051
	D(RETURNCO5(-2))	0.819	-0.030		D(RETURNCO12(-2))	0.113	0.004
co6	D(VOLCO6(-1))	-0.606*	0.001	**co13**	D(VOLCO13(-1))	-0.619*	-0.003*
	D(VOLCO6(-2))	-0.296*	0.002		D(VOLCO13(-2))	-0.247*	-0.001
	D(RETURNCO6(-1))	-0.926	0.126*		D(RETURNCO13(-1))	-2.100	0.044
	D(RETURNCO6(-2))	-1.177	0.060		D(RETURNCO13(-2))	-0.340	0.058
co7	D(VOLCO7(-1))	-0.542*	0.002	**co14**	D(VOLCO14(-1))	-0.572*	0.000
	D(VOLCO7(-2))	-0.300*	0.000		D(VOLCO14(-2))	-0.251*	0.001
	D(RETURNCO7(-1))	0.615	-0.062		D(RETURNCO14(-1))	2.077	0.027
	D(RETURNCO7(-2))	1.005	-0.051		D(RETURNCO14(-2))	1.844	0.018

	Error Correction:	D(VOL)	D (RETURN)		Error Correction:	D(VOL)	D (RETURN)
co15	D(VOLCO15(-1))	-0.545*	0.002	**co25**	D(VOLCO25(-1))	-0.566*	0.003
	D(VOLCO15(-2))	-0.277*	0.002		D(VOLCO25(-2))	-0.299*	0.001
	D(RETURNCO15(-1))	0.677	0.047		D(RETURNCO25(-1))	1.150*	-0.065
	D(RETURNCO15(-2))	0.886	0.017		D(RETURNCO25(-2))	0.501	-0.076*
co16	D(VOLCO16(-1))	-0.530*	0.002	**co26**	D(VOLCO26(-1))	-0.570*	-0.001
	D(VOLCO16(-2))	-0.291*	0.001		D(VOLCO26(-2))	-0.223*	-0.002
	D(RETURNCO16(-1))	0.871	-0.011		D(RETURNCO26(-1))	0.789	-0.099*
	D(RETURNCO16(-2))	0.161	-0.021		D(RETURNCO26(-2))	0.405	-0.086*
co17	D(VOLCO17(-1))	-0.519*	-0.002	**co27**	D(VOLCO27(-1))	-0.567*	0.001
	D(VOLCO17(-2))	-0.295*	0.000		D(VOLCO27(-2))	-0.256*	0.000
	D(RETURNCO17(-1))	-1.440	-0.093		D(RETURNCO27(-1))	0.165	-0.033
	D(RETURNCO17(-2))	-0.058	-0.046		D(RETURNCO27(-2))	1.004	-0.046
co18	D(VOLCO18(-1))	-0.558*	0.005*	**co28**	D(VOLCO28(-1))	-0.529*	0.000
	D(VOLCO18(-2))	-0.270*	0.002		D(VOLCO28(-2))	-0.274*	0.001
	D(RETURNCO18(-1))	4.100*	-0.026		D(RETURNCO28(-1))	0.423	0.092
	D(RETURNCO18(-2))	2.008	0.005		D(RETURNCO28(-2))	0.857	0.018
co19	D(VOLCO19(-1))	-0.524*	0.001	**co29**	D(VOLCO29(-1))	-0.514*	0.003
	D(VOLCO19(-2))	-0.200*	0.000		D(VOLCO29(-2))	-0.229*	0.000
	D(RETURNCO19(-1))	-2.238	-0.014		D(RETURNCO29(-1))	1.469	0.021
	D(RETURNCO19(-2))	-2.284*	0.013		D(RETURNCO29(-2))	0.749	0.000
co20	D(VOLCO20(-1))	-0.631*	0.001	**co30**	D(VOLCO30(-1))	-0.539*	0.001
	D(VOLCO20(-2))	-0.276*	0.003*		D(VOLCO30(-2))	-0.245*	0.001
	D(RETURNCO20(-1))	1.986	0.024		D(RETURNCO30(-1))	0.772	-0.072
	D(RETURNCO20(-2))	-1.003	0.053		D(RETURNCO30(-2))	0.373	-0.073*
co21	D(VOLCO21(-1))	-0.581*	-0.002	**co31**	D(VOLCO31(-1))	-0.626*	-0.001
	D(VOLCO21(-2))	-0.317*	-0.001		D(VOLCO31(-2))	-0.295*	0.001
	D(RETURNCO21(-1))	-0.192	-0.067		D(RETURNCO31(-1))	0.317	-0.058
	D(RETURNCO21(-2))	0.273	-0.038		D(RETURNCO31(-2))	0.023	-0.020
co22	D(VOLCO22(-1))	-0.543*	0.001	**co32**	D(VOLCO32(-1))	-0.516*	0.001
	D(VOLCO22(-2))	-0.224*	-0.001		D(VOLCO32(-2))	-0.257*	0.000
	D(RETURNCO22(-1))	2.847*	-0.047		D(RETURNCO32(-1))	1.622	-0.013
	D(RETURNCO22(-2))	1.161*	-0.044		D(RETURNCO32(-2))	0.964	-0.042
co23	D(VOLCO23(-1))	-0.529*	0.001	**co33**	D(VOLCO33(-1))	-0.536*	0.000
	D(VOLCO23(-2))	-0.255*	0.001		D(VOLCO33(-2))	-0.288*	0.000
	D(RETURNCO23(-1))	1.137	-0.061		D(RETURNCO33(-1))	1.524	0.024
	D(RETURNCO23(-2))	0.959	-0.038		D(RETURNCO33(-2))	2.859*	0.030
co24	D(VOLCO24(-1))	-0.488*	0.000	**co34**	D(VOLCO34(-1))	-0.547*	0.001
	D(VOLCO24(-2))	-0.274*	0.000		D(VOLCO34(-2))	-0.330*	0.002
	D(RETURNCO24(-1))	0.661	-0.059		D(RETURNCO34(-1))	0.702	0.024
	D(RETURNCO24(-2))	0.816	-0.057		D(RETURNCO34(-2))	0.653	-0.002

	Error Correction:	D(VOL)	D (RETURN)		Error Correction:	D(VOL)	D (RETURN)
co35	D(VOLCO35(-1))	-0.535*	-0.001	**co45**	D(VOLCO45(-1))	-0.504*	0.001
	D(VOLCO35(-2))	-0.256*	-0.002		D(VOLCO45(-2))	-0.282*	0.001
	D(RETURNCO35(-1))	1.615	0.011		D(RETURNCO45(-1))	-1.616	0.025
	D(RETURNCO35(-2))	1.216	0.052		D(RETURNCO45(-2))	-0.187	0.002
co36	D(VOLCO36(-1))	-0.595*	0.000	**co46**	D(VOLCO46(-1))	-0.526*	0.004
	D(VOLCO36(-2))	-0.287*	0.001		D(VOLCO46(-2))	-0.261*	0.002
	D(RETURNCO36(-1))	-1.107	0.020		D(RETURNCO46(-1))	0.486	0.001
	D(RETURNCO36(-2))	-0.832	0.000		D(RETURNCO46(-2))	0.852	-0.001
co37	D(VOLCO37(-1))	-0.578*	0.001	**co47**	D(VOLCO47(-1))	-0.608*	0.001
	D(VOLCO37(-2))	-0.307*	0.002		D(VOLCO47(-2))	-0.303*	-0.001
	D(RETURNCO37(-1))	-1.907	0.029		D(RETURNCO47(-1))	2.270	-0.106
	D(RETURNCO37(-2))	-1.053	0.002		D(RETURNCO47(-2))	1.619	-0.024
co38	D(VOLCO38(-1))	-0.506*	0.001	**co48**	D(VOLCO48(-1))	-0.544*	0.003
	D(VOLCO38(-2))	-0.239*	-0.001		D(VOLCO48(-2))	-0.285*	0.001
	D(RETURNCO38(-1))	1.803*	-0.020		D(RETURNCO48(-1))	2.416*	-0.023
	D(RETURNCO38(-2))	0.988	-0.045		D(RETURNCO48(-2))	1.648*	0.000
co39	D(VOLCO39(-1))	-0.513*	0.002	**co49**	D(VOLCO49(-1))	-0.475*	0.001
	D(VOLCO39(-2))	-0.276*	0.002		D(VOLCO49(-2))	-0.248*	0.002
	D(RETURNCO39(-1))	1.255	0.010		D(RETURNCO49(-1))	1.158	0.005
	D(RETURNCO39(-2))	0.979	-0.026		D(RETURNCO49(-2))	0.944*	-0.049
co40	D(VOLCO40(-1))	-0.520*	0.000	**co50**	D(VOLCO50(-1))	-0.522*	0.000
	D(VOLCO40(-2))	-0.240*	0.000		D(VOLCO50(-2))	-0.268*	0.001
	D(RETURNCO40(-1))	1.266	0.066		D(RETURNCO50(-1))	-0.746	0.009
	D(RETURNCO40(-2))	0.730	-0.010		D(RETURNCO50(-2))	1.527	-0.051
co41	D(VOLCO41(-1))	-0.618*	-0.001	**co51**	D(VOLCO51(-1))	-0.595*	0.004*
	D(VOLCO41(-2))	-0.299*	-0.001		D(VOLCO51(-2))	-0.296*	0.002
	D(RETURNCO41(-1))	1.038	0.002		D(RETURNCO51(-1))	1.030	-0.110*
	D(RETURNCO41(-2))	1.036	0.042		D(RETURNCO51(-2))	0.867	-0.074*
co42	D(VOLCO42(-1))	-0.547*	0.001	**co52**	D(VOLCO52(-1))	-0.541*	-0.001
	D(VOLCO42(-2))	-0.251*	0.001		D(VOLCO52(-2))	-0.285*	0.000
	D(RETURNCO42(-1))	0.507	-0.052		D(RETURNCO52(-1))	0.600	0.077
	D(RETURNCO42(-2))	-0.014	-0.020		D(RETURNCO52(-2))	0.694	0.038
co43	D(VOLCO43(-1))	-0.528*	0.001	**co53**	D(VOLCO53(-1))	-0.593*	0.000
	D(VOLCO43(-2))	-0.244*	0.002*		D(VOLCO53(-2))	-0.283*	0.000
	D(RETURNCO43(-1))	1.303*	0.023		D(RETURNCO53(-1))	-0.167	0.040
	D(RETURNCO43(-2))	1.440	0.002		D(RETURNCO53(-2))	0.650	0.019
co44	D(VOLCO44(-1))	-0.551*	0.001	**co54**	D(VOLCO54(-1))	-0.593*	0.000
	D(VOLCO44(-2))	-0.233*	0.002		D(VOLCO54(-2))	-0.279*	0.000
	D(RETURNCO44(-1))	0.034	0.149*		D(RETURNCO54(-1))	1.782	0.114*
	D(RETURNCO44(-2))	0.646	0.070*		D(RETURNCO54(-2))	1.440	0.027

*Signeficant (t-statistic ≥ 2.5)

VOT and) !ǸǿƨŬǫ ƣǿǝǸǰƳ ǀƑǴƫǂǸ üǸǫƣǂǁǫ !ǕƟ ǲǐǴ ǐǏǀǏǲƑǐǏƣǁǫ ǐƺűyǁǫ .č

:(VOL

ǲĂùǒ!ƒ ýĂƒƥƙ ǲƞơĂ Ǒ!ǴƠ!ƒ ýĂƒƥƙ!ƒ ǲƞơ ǈǑǐ ǂǒǂǒǲǴǇǒƥ!ƒ ǂƥǔƶ!ƒ ýǒǁơƙ ƫǐƪ Ǵǲǒ5 ǲƙ ƥǀ!

Ǒùǁǒ Ǵǲǒ5Ă ÜǇǑƙƨǲ ǸơƧT ƥǴƶǒ Ǚ Ĭƙơ Ǒǁǒ Ǵǲǲ ǸƑǴǇǐƙƪƒ ǲƙǒƪ ǂǒǁƵ Ă ÜǇǑǲĂǒ ýǐƥ Ǵǲ!Ă ƫǐǴƪ!ƒ

ƫơǚ!ƒ ýĂƥƞ!ƒ Ǒ5 ǑǸ Ǵǲǂ ǲǌƪǛƒ ƥƑƒĂƵ ƘǴǐǁǁƙĂ ýĂƒƥƙ!ƒ ǲƞơ ǈǑǐ ǂǒǂǒǲǴǇǒƥ!ƒ ǂƥǔƶǁ! ýǒǁơƙ

.(ē-đ) ǲƥƨ

ƫǐǴƪù!ƒ ǲĂùǒ!ƒ ǲǌùƪǏ ƥƑƒĂƵ ƘǴǐǁǁƙĂ Ǒ!ǴƠ!ƒ ǲĂǒ!ƒ ýĂƒƥƙ ǲƞơĂ ǈǑǐ ǂǒǂǒǲǴǇǒƥ!ƒ ǂƥǔƶ!ƒ -Ǐ
.(VOT-1 and VOL)

ǂù!Ǜƥ ƘƒƦ ýƞǛƒ ǀƨǒƬƥ ǂǒǂǒǲǴǇǒƥ ǂƥǔƵ ƥƞĂǒ Ǚ ǸǇǏ (VEC) ƨǴǐƙƤƒ ǋƑǴƙǇ ƘƨǌǗǏ

ǂƥǔƵ ǁǴǇǸ ǇǴǂ ǸǇƒ ǂǒơ ÜǑ!Ǵơ!ƒ ǲĂǒ!ƒ ýĂƒƥƙ ǲƞơĂ ƫǐǴƪ!ƒ ǲĂǒ!ƒ ƥƑƒĂƵ ƘǴǐǁǁƙ ǈǑǐ ǂǒƑǴƬơǫ

Ǵùǌǈǲ ǇǴùǂ ǂùǒơ Üǂƪƒƨƥ!ƒ ǂǈǒƵ ǇǲǶ %ĎĐ ǸƙǐƪǇ Ǵǲǐ ǂǂƨT (čď) Ǒ5 ǂǒƑǴƬơǫ ǂ!Ǜƥ ƘƒƦ

%čđ ǸƙǐƪùǇ Ǵǲǐ ǂǂƨT (Ď) Ă ǂǐƞĂǲ ǂƥǔƵ ƥĂƞĂ Ĭ!ǫ ƨǒTƙ %Ěđ ǸƙǐƪǇ Ǵǲǐ ǂǂƨT (čč)

ǂùǲǒƥ ǇĂùǂƙ ǴǲƥǇƵ ǂǒƑǴƬơǫ ǂ!Ǜƥ ƘƒƦ ǇĂǂƙ ǂƥǔƶ!ƒ ǇǏ ǂǒơ ÜǂǒǁǁƪǇ ǂƥǔƵ ƥĂƞĂ Ĭ!ǫ ƨǒTƙ

.(Ď,đ) ĭĂǴƪƙ ĂǏ ƨǐǂƒ ǂǁǁƱǲ!ƒ (t-statistic)

ǇǑǲĂùǒ ýùǐƥ Ǵǲ ǲǌƪǏ ƥƑƒĂƵ ƘǴǐǁǁƙĂ Ǒ!ǴƠ!ƒ ǲĂǒ!ƒ ýĂƒƥƙ ǲƞơĂ ǈǑǐ ǂǒǂǒǲǴǇǒƥ!ƒ ǂƥǔƶ!ƒ -Ɣ
.(VOT -2 and VOL)

ǂù!Ǜƥ ƘƒƦ ýùƞǛƒ ǀƨǒƬƥ ǂǒǂǒǲǴǇǒƥ ǂƥǔƵ ƥƞĂǒ Ǚ ǸǇǏ (VEC) ƨǴǐƙƤƒ ǋƑǴƙǇ ƘƨǌǗǏ

ǁǴùǇǸ ǇǴǂ ǸǇƒ ǂǒơ ÜǑ!Ǵơ!ƒ ǲĂǒ!ƒ ýĂƒƥƙ ǲƞơ Ĭǁ Ƶ ǇǑǲĂǒ ýǐƥ Ǵǲ ƥƑƒĂƵ ƘǴǐǁǁƙ ǈǑǐ ǂǒƑǴƬơǫ

ƘùǇǴǂ Ǒƙ!ƒĂ Üǂƪƒƨƥ!ƒ ǂǈǒƵ ǇǲǶ %čđ ǸƙǐƪǇ Ǵǲǐ ƘǴǂƨT (Ě) Ǒ5 ǂǒƑǴƬơǫ ǂ!Ǜƥ ƘƒƦ ǂƥǔƵ

ǇĂǂƙ ǴǲƥǇƵ ǂǒƑǴƬơǫ ǂ!Ǜƥ ƘƒƦ ǇĂǂƙ ǂƥǔƶ!ƒ ǇǏ ǂǒơ ǂǐƞĂǲ ǂƥǔƵ ƥĂƞĂ Ĭ!ǫ ƨǒTƙ Ǵǌƶǒǲƞ

.(Ď,đ) ĭĂǴƪƙ ĂǏ ƨǐǂƒ ǂǁǁƱǲ!ƒ (t-statistic) ǂǲǒƥ

þĂùŋĂƅ) ŧùǁƑƓǃ!ƒ ŧǁõþƅ!ƒ ŧõưƧƽ!ƒ Ưʹ5Ƨ Ǆƙõʅ (ŧ ÜƘ) ǇõƙƧǀƽ!ƒ Ǒ5 Ǆþǀƙ Ɠǆ Ĭǁǅ ƒƇƓǈƅĂ

.(ƨƅƓʅ!ƒ ýĂƒþƙ!ƒ ǄŋơĂ ŧõ!Ɠơ!ƒ ǄǌʅǕƒ þƑƒĂƵ ƘƓƅǁǀƙ Ǉõƅ ŧõŧõǆƓǈõþ ŧþǘƵ.

VOT -1) ƨƅƓʅ!ƒ ǄĂõ!ƒ ǄǌʅƊ þƑƒĂƵĂ Ǒ!Ɠơ!ƒ ǄĂõ!ƒ ǄǌʅƊ þƑƒĂƵ Ǉõƅ ŧõŧõǆƓǈõþ!ƒ ŧþǘƶ!ƒ -Ɯ
.(and VOT

ŧù!Ǖþ ƘƒƦ ýùŋǕƒ ǀƧõƮùþ ŧõŧõǆƓǈõþ ŧþǘƵ ǁƓǈǋ ǇƊ (VEC) ƧƓƅƙƤƒ ǋƑƓƙǈ ƘƧǌǗƊ

ǊǈƒŧõơÜǑ!Ɠơ!ƒ ǄĂõǁ! ǄǌʅǕƒ þƑƒĂƵ ƘƓƅǁǀƙĂ ƨƅƓʅ!ƒ ǄĂõǁ! ǄǌʅǕƒ þƑƒĂƵ ƘƓƅǁǀƙ Ǉõƅ ŧõƑƓƮơǫ

ŧùǈõƵ Ǆùŋơ Ǉùǆ %đē ǊƙƅʅùǈƓǆƅ ŧŧƧT (ďč) Ǒ5 ŧõƑƓƮơǫ ŧ!Ǖþ ƘƒƦ ŧþǘƵ ǁƓǈǋ ǇƓŧ

ǇƊ ŧùõơ Üŧõƅǁùʅ ŧõŧõǆƓǈõþ ŧþǘƵ þĂŋĂ Ĭ!ǫ ƧõTƙ ƘƓŧƧT!ƒ ǈǇǋ ýõǆŋ ƘǈƓŧ ŧõơ Üŧʅ ƒƧþ!ƒ

ĭĂƓʅùƙ ĂƊ Ƨùƅŧƒ ŧǀǁƱǆ!ƒ (t-statistic) ŧǆõþ ǇĂŧƙ ƓǆþǈƵ ŧõƑƓƮơǫ ŧ!Ǖþ ƘƒƦ ǇĂŧƙ ŧþǘƶ!ƒ

.(Ď,đ)

VOT -) ǇõǆĂõ ýƅþ Ɠǆ! ǄǌʅǕƒ þƑƒĂƵĂ Ǒ!Ɠơ!ƒ ǄĂõ!ƒ ǄǌʅƊ þƑƒĂƵ Ǉõƅ ŧõŧõǆƓǈõþ!ƒ ŧþǘƶ!ƒ -Ɵ
.(2 and VOT

ŧù!Ǖþ ƘƒƦ ýùŋǕƒ ǀƧõƮùþ ŧõŧõǆƓǈõþ ŧþǘƵ ǁƓǈǋ ǇƊ (VEC) ƧƓƅƙƤƒ ǋƑƓƙǈ ƘƧǌǗƊ

ŧùõơ ÜǑ!Ɠơ!ƒ ǄĂõǁ! ǄǌʅǕƒ þƑƒĂƵ ƘƓƅǁǀƙĂ ǇõǆĂõ ýƅþ Ɠǆ! ǄǌʅǕƒ þƑƒĂƵ ƘƓƅǁǀƙ Ǉõƅ ŧõƑƓƮơǫ

ŧùǈõƵ Ǆùŋơ Ǉǆ %ďē ǊƙƅʅǈƓǆƅ ŧŧƧT (ĎČ) Ǒ5 ŧõƑƓƮơǫ ŧ!Ǖþ ƘƒƦ ŧþǘƵ ǁƓǈǋ ǇƓŧ Ǌǈƒ

Ĭù!ǫ ƧõTùƙ Ĭù!ǫ ƧõTƙ %đ ǊƙƅʅǈƓǆƅ ǀþơĂ ŧŧƧT ƘƓŧƧT!ƒ ǈǇǋ Ǉǆ ƘǈƓŧ ŧõơ Üŧʅ ƒƧþ!ƒ

ŧùþǘƵ þĂùŋĂ Ĭù!ǫ ƧõTùƙ %ěđ ǊƙƅʅǈƓǆƅ ŧŧƧT (čě) Ă ŧõƅƓŋõƒ ŧõŧõǆƓǈõþ ŧþǘƵ þĂŋĂ

ŧùǀǁƱǆ!ƒ (t-statistic) ŧǆõþ ǇĂŧƙ ƓǆþǈƵ ŧõƑƓƮơǫ ŧ!Ǖþ ƘƒƦ ǇĂŧƙ ŧþǘƶ!ƒ ǇƊ ŧõơ ÜŧõƅƓŋõƒ

.(Ď,đ) ĭĂƓʅƙ ĂƊ Ƨƅŧƒ

þùƑƒĂƶ!ƒ ƘƓƅǁǀƙ Ǉõƅ ŧõŧõǆƓǈõþ ŧþǘƵ þĂŋĂ Ĭ!ǫ ǇƒƧõTõ ǇõǀƅƓʅ!ƒ ǇõƧƓƅƙƤǕƒ ǇƓƽ ǁ!ǋƅĂ

.ƧõƮǀ!ƒ ăþǆ!ƒ Ĭǁǅ ŧõ!Ɠơ!ƒĂ ŧǀƅƓʅ!ƒ

þĂùηĂh) Ɨùl̈FĆl!ƒ Ɨùl̈ŏþh!ƒ Ɨŏư Ƨ5!ƒ ýĂhp DžkŏƖ (Θ ÜШ) LJŏkƧl5!ƒ Ŏ5 Džþlk Ĉdž ǏlŻ ƒCĈGljhĂ

.(ƗlhĆƖ!ƒ Džnj Ɩ Ü̃ƒ þFƒĂZ ǨĜhl̈lkĂ Ɨŏ!Ćơ!ƒ Džnj Ɩ Ü̃ƒ þFƒĂZ ǨĜhl̈lk LJŏh Ɨŏ+ŏdžĜljŏþ Ɨpŭz

Ŏùk!ƒ Lu and Lin, (2010) Ɨ Ɩƒ Ƨþ Nlh ǨCĈη Ćdž yđž ѕ5ƒĂkk ƗlhĆƖ!ƒ Ɨηŏkĺj!ƒ LJĆ5 ƒRnjhĂ

ǨĆùhl̈lk!ƒ LJŏùh Ɨŏ+ŏdžĜljŏþ Ɨpŭz þĂηĂ Ǐ!ϙ ǨƧĆTD Ɨŏơ þljnj!ƒ Ŏ5 ĭĜhdžĂh ѕĂƖ ǏlŻ ǨŏƧηD

.ƗlhĆƖ!ƒ ǨĜhl̈lk!ƒ ýŭP LJdž Ɨŏl̈hlkƖdž!ƒ ƧĆzƖ Ü̃ƒ ǨĜhl̈lkh ƋhLjk!ƒ LJ+džŏ NLjfĂ Ɨŏ!Ćơ!ƒĂ ƗlhĆƖ!ƒ

(ē-đ) ĎĵƧ ýĂþŋ!ƒ

(Vector Error Corection Model)

ĎnjƖŪƒ þƑƒĂƵ ƘǴĥǐǀƙĂ ýĂƒþƙ!ƒ Ďŋơ LJŏh ŀŏŧŏdžǤǉŏþ!ƒ ŀþǚƶ!ƒ

	Error Correction:	**D(VOL)**	**D(VOT)**		**Error Correction:**	**D(VOL)**	**D(VOT)**
co1	D(VOLCO1(-1))	-0.519*	0.000*	**co8**	D(VOLCO8(-1))	-0.565*	0.000
	D(VOLCO1(-2))	-0.208*	0.000		D(VOLCO8(-2))	-0.240*	0.000
	D(VOTCO1(-1))	8.325	-0.030		D(VOTCO8(-1))	-6.074	-0.038
	D(VOTCO1(-2))	4.557	-0.007		D(VOTCO8(-2))	-4.090	-0.019
co2	D(VOLCO2(-1))	-0.541*	0.000	**co9**	D(VOLCO9(-1))	-0.596*	0.000
	D(VOLCO2(-2))	-0.265*	0.000		D(VOLCO9(-2))	-0.324*	0.000
	D(VOTCO2(-1))	-6.552	-0.002		D(VOTCO9(-1))	5.967	0.008
	D(VOTCO2(-2))	-3.328	-0.002		D(VOTCO9(-2))	2.264	0.004
co3	D(VOLCO3(-1))	-0.638*	0.000	**co10**	D(VOLCO10(-1))	-0.523*	-0.001
	D(VOLCO3(-2))	-0.260*	0.000		D(VOLCO10(-2))	-0.284*	0.008
	D(VOTCO3(-1))	0.923	0.000		D(VOTCO10(-1))	0.041	0.003
	D(VOTCO3(-2))	0.122	0.002		D(VOTCO10(-2))	0.004	0.001
co4	D(VOLCO4(-1))	-0.556*	0.000	**co11**	D(VOLCO11(-1))	-0.658*	0.000
	D(VOLCO4(-2))	-0.262*	0.000		D(VOLCO11(-2))	-0.311*	0.000
	D(VOTCO4(-1))	8.469	-0.008		D(VOTCO11(-1))	-0.210	0.001
	D(VOTCO4(-2))	1.517	-0.006		D(VOTCO11(-2))	-2.108	0.000
co5	D(VOLCO5(-1))	-0.372*	0.000	**co12**	D(VOLCO12(-1))	-0.543*	0.000
	D(VOLCO5(-2))	-0.211*	0.000		D(VOLCO12(-2))	-0.265*	0.000
	D(VOTCO5(-1))	-65.070*	-0.857*		D(VOTCO12(-1))	5.330	-0.067
	D(VOTCO5(-2))	-5.264	-0.051		D(VOTCO12(-2))	14.285	-0.042
co6	D(VOLCO6(-1))	-0.618*	0.000	**co13**	D(VOLCO13(-1))	-0.622*	0.000
	D(VOLCO6(-2))	-0.294*	0.000		D(VOLCO13(-2))	-0.250*	0.000
	D(VOTCO6(-1))	-8.611	-0.034		D(VOTCO13(-1))	16.501	-0.129*
	D(VOTCO6(-2))	4.169	-0.005		D(VOTCO13(-2))	56.837	-0.063
co7	D(VOLCO7(-1))	-0.546*	0.000	**co14**	D(VOLCO14(-1))	-0.565*	0.000
	D(VOLCO7(-2))	-0.300*	0.000		D(VOLCO14(-2))	-0.248*	0.000
	D(VOTCO7(-1))	14.799	-0.045		D(VOTCO14(-1))	-4.734	-0.020
	D(VOTCO7(-2))	12.607	-0.003		D(VOTCO14(-2))	-5.386	-0.018

	Error Correction:	D(VOL)	D(VOT)		Error Correction:	D(VOL)	D(VOT)
co15	D(VOLCO15(-1))	-0.522*	0.000	**co25**	D(VOLCO25(-1))	-0.537*	-0.001
	D(VOLCO15(-2))	-0.264*	0.000		D(VOLCO25(-2))	-0.290*	0.000
	D(VOTCO15(-1))	-3.184	-0.023		D(VOTCO25(-1))	-1.698*	-0.004
	D(VOTCO15(-2))	-0.579	-0.011		D(VOTCO25(-2))	-0.545	-0.001
co16	D(VOLCO16(-1))	-0.518*	0.000	**co26**	D(VOLCO26(-1))	-0.550*	0.000
	D(VOLCO16(-2))	-0.285*	0.000		D(VOLCO26(-2))	-0.212*	0.00·
	D(VOTCO16(-1))	-11.170	-0.069*		D(VOTCO26(-1))	2.482	-0.01·
	D(VOTCO16(-2))	-0.632	-0.026		D(VOTCO26(-2))	1.569	-0.008
co17	D(VOLCO17(-1))	-0.520*	0.000	**co27**	D(VOLCO27(-1))	-0.575*	0.000
	D(VOLCO17(-2))	-0.296*	0.000		D(VOLCO27(-2))	-0.258*	0.000
	D(VOTCO17(-1))	11.346	-0.199*		D(VOTCO27(-1))	86.313*	-0.164*
	D(VOTCO17(-2))	38.326	-0.078*		D(VOTCO27(-2))	54.120	-0.040
co18	D(VOLCO18(-1))	-0.558*	0.000	**co28**	D(VOLCO28(-1))	-0.451*	0.002
	D(VOLCO18(-2))	-0.263*	0.000		D(VOLCO28(-2))	-0.229*	0.000
	D(VOTCO18(-1))	89.521*	-0.174*		D(VOTCO28(-1))	-10.459	-0.080
	D(VOTCO18(-2))	30.309	-0.098*		D(VOTCO28(-2))	8.750	2.456
co19	D(VOLCO19(-1))	-0.527*	0.000	**co29**	D(VOLCO29(-1))	-0.511*	0.000*
	D(VOLCO19(-2))	-0.199*	0.000		D(VOLCO29(-2))	-0.224*	0.000
	D(VOTCO19(-1))	42.871*	-0.028		D(VOTCO29(-1))	44.093	-0.095*
	D(VOTCO19(-2))	21.950	-0.004		D(VOTCO29(-2))	33.930	-0.021
co20	D(VOLCO20(-1))	-0.568*	0.000*	**co30**	D(VOLCO30(-1))	-0.523*	0.000
	D(VOLCO20(-2))	-0.255*	0.000		D(VOLCO30(-2))	-0.241*	0.000
	D(VOTCO20(-1))	149.632*	-0.236*		D(VOTCO30(-1))	0.822	-0.006
	D(VOTCO20(-2))	121.415*	-0.090		D(VOTCO30(-2))	0.325	-0.003
co21	D(VOLCO21(-1))	-0.578*	0.000	**co31**	D(VOLCO31(-1))	-0.628*	0.000
	D(VOLCO21(-2))	-0.316*	0.001		D(VOLCO31(-2))	-0.303*	0.000
	D(VOTCO21(-1))	0.316	-0.009		D(VOTCO31(-1))	6.231	-0.178*
	D(VOTCO21(-2))	-0.932	-0.004		D(VOTCO31(-2))	47.737	-0.097*
co22	D(VOLCO22(-1))	-0.514*	0.000	**co32**	D(VOLCO32(-1))	-0.504*	0.000
	D(VOLCO22(-2))	-0.217*	0.000		D(VOLCO32(-2))	-0.254*	0.000
	D(VOTCO22(-1))	-20.839	-0.097*		D(VOTCO32(-1))	-63.278	-0.306*
	D(VOTCO22(-2))	-9.996	-0.038		D(VOTCO32(-2))	-3.411	-0.147*
co23	D(VOLCO23(-1))	-0.509*	0.000	**co33**	D(VOLCO33(-1))	-0.436*	0.000*
	D(VOLCO23(-2))	-0.246*	0.000		D(VOLCO33(-2))	-0.232*	0.000
	D(VOTCO23(-1))	-1.046	-0.237*		D(VOTCO33(-1))	-110.747	-0.260*
	D(VOTCO23(-2))	-1.548	-0.109*		D(VOTCO33(-2))	-85.278	-0.133*
co24	D(VOLCO24(-1))	-0.472*	0.000	**co34**	D(VOLCO34(-1))	-0.529*	0.000*
	D(VOLCO24(-2))	-0.262*	0.000		D(VOLCO34(-2))	-0.316*	0.000*
	D(VOTCO24(-1))	-6.550	-0.231*		D(VOTCO34(-1))	35.746	-0.164*
	D(VOTCO24(-2))	3.805	-0.030		D(VOTCO34(-2))	15.005	-0.085*

	Error Correction:	D(VOL)	D(VOT)		Error Correction:	D(VOL)	D(VOT)
co35	D(VOLCO35(-1))	-0.516*	0.000*	**co45**	D(VOLCO45(-1))	-0.505*	0.000
	D(VOLCO35(-2))	-0.242*	0.000		D(VOLCO45(-2))	-0.276*	0.000
	D(VOTCO35(-1))	-1.013	-0.271*		D(VOTCO45(-1))	13.713	-0.021
	D(VOTCO35(-2))	4.321	-0.092*		D(VOTCO45(-2))	-0.277	-0.010
co36	D(VOLCO36(-1))	-0.602*	0.000	**co46**	D(VOLCO46(-1))	-0.518*	0.000
	D(VOLCO36(-2))	-0.292*	0.000		D(VOLCO46(-2))	-0.248*	0.000
	D(VOTCO36(-1))	2.280	-0.002		D(VOTCO46(-1))	45.620*	-0.245*
	D(VOTCO36(-2))	1.415	-0.001		D(VOTCO46(-2))	17.024	-0.085*
co37	D(VOLCO37(-1))	-0.576*	-0.001	**co47**	D(VOLCO47(-1))	-0.400*	0.000
	D(VOLCO37(-2))	-0.308*	0.000		D(VOLCO47(-2))	-0.192*	0.000
	D(VOTCO37(-1))	0.093	-0.002		D(VOTCO47(-1))	-3.216	-0.988*
	D(VOTCO37(-2))	1.078	-0.003		D(VOTCO47(-2))	3.266	-0.403*
co38	D(VOLCO38(-1))	-0.482*	0.000*	**co48**	D(VOLCO48(-1))	-0.529*	0.000
	D(VOLCO38(-2))	-0.229*	0.000		D(VOLCO48(-2))	-0.281*	0.000
	D(VOTCO38(-1))	8.536	-0.178*		D(VOTCO48(-1))	60.534	-0.229*
	D(VOTCO38(-2))	23.895	-0.089*		D(VOTCO48(-2))	50.851*	-0.121*
co39	D(VOLCO39(-1))	-0.516*	0.000	**co49**	D(VOLCO49(-1))	-0.457*	0.000*
	D(VOLCO39(-2))	-0.272*	0.000		D(VOLCO49(-2))	-0.238*	0.000
	D(VOTCO39(-1))	37.242	-0.193*		D(VOTCO49(-1))	-3.823	-0.064
	D(VOTCO39(-2))	22.886	-0.069*		D(VOTCO49(-2))	-3.286	-0.031
co40	D(VOLCO40(-1))	-0.510*	0.000	**co50**	D(VOLCO50(-1))	-0.530*	0.000
	D(VOLCO40(-2))	-0.233*	0.000		D(VOLCO50(-2))	-0.252*	0.000
	D(VOTCO40(-1))	48.790*	-0.135*		D(VOTCO50(-1))	110.491*	-0.206*
	D(VOTCO40(-2))	27.523*	-0.050*		D(VOTCO50(-2))	54.028	-0.117*
co41	D(VOLCO41(-1))	-0.624*	0.000*	**co51**	D(VOLCO51(-1))	-0.590*	0.000*
	D(VOLCO41(-2))	-0.306*	0.000*		D(VOLCO51(-2))	-0.287*	0.000*
	D(VOTCO41(-1))	60.843	-0.163*		D(VOTCO51(-1))	167.612*	-0.248
	D(VOTCO41(-2))	60.524*	-0.036		D(VOTCO51(-2))	69.507*	-0.141*
co42	D(VOLCO42(-1))	-0.470*	0.000*	**co52**	D(VOLCO52(-1))	-0.536*	0.000
	D(VOLCO42(-2))	-0.215*	0.000*		D(VOLCO52(-2))	-0.284*	0.000
	D(VOTCO42(-1))	-115.946*	-0.183*		D(VOTCO52(-1))	-3.653	-0.001
	D(VOTCO42(-2))	-22.507	-0.084*		D(VOTCO52(-2))	-1.298	0.001
co43	D(VOLCO43(-1))	-0.522*	0.000*	**co53**	D(VOLCO53(-1))	-0.595*	0.000
	D(VOLCO43(-2))	-0.234*	0.000*		D(VOLCO53(-2))	-0.276*	0.000
	D(VOTCO43(-1))	107.459*	-0.131*		D(VOTCO53(-1))	151.184*	-0.157*
	D(VOTCO43(-2))	49.526*	-0.068*		D(VOTCO53(-2))	72.937*	-0.081*
co44	D(VOLCO44(-1))	-0.559*	0.000	**co54**	D(VOLCO54(-1))	-0.604*	0.000
	D(VOLCO44(-2))	-0.228*	0.000		D(VOLCO54(-2))	-0.286*	0.000
	D(VOTCO44(-1))	73.433	-0.130*		D(VOTCO54(-1))	118.069*	-0.200*
	D(VOTCO44(-2))	8.363	-0.013		D(VOTCO54(-2))	94.248*	-0.043

*Signeficant (t-statistic ≥ 2.5)

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Al-Dwairi, Khaled M. Fandi. The Dynamic Relationships between Trading Volume, Stock Returns, and Volatility: Evidence from Amman Stock Exchange. Master thesis, Yarmouk University (2013). (Supervisor: D. Dima Al-Rabadi)

The main objective of this study is to investigate the dynamic relationship between trading volume, stock retune and volatility, using daily data for the period between 1/1/2002 to 31/12/2011, for 54 listed firms in Amman stock Exchange (ASE).

In order to achieve the study objective, three test have been used, first this study used Johansen Cointegration test to investigate the Long run Cointegration relationship between the study variables, Granger Causality test has been used to find out if there is an causal relationship between trading volumes, stock retune and volatility. Finley, Vector Error Correction Model (VEC) has been used to test the short run dynamic relationship between variables.

The result of the Johansen Cointegration test provide an evidence about the existents of long run Cointegration relationship between trading volume, stock retune for all firms in the study sample، and long run Cointegration relationship between trading volume and volatility for 90% of firms in the study sample. The result of Granger Causality test shows that there is a significant negative Unit-Directional relationship between stock retune and trading volumes for 70% of study sample, but for the causality relation between trading volume and the volatility of stock retune the relation still ambiguous.

The study found significant negative short run dynamic relationship between contemporaneous trading volume and previous trading volume for all firms in the study sample. In addition there is a significant

positive short run dynamic relationship between contemporaneous return volatility and previous return volatility for 57% of firm's sample.

In the other hand the study found no significant dynamic relationship in the short-run between each of the contemporaneous trading volume and previous stock return and between the contemporaneous stock return and previous trading volume, the study doesn't found any evidences that support the assumption about the existents of short run dynamic relationship between contemporaneous stock return and previous stock returns and between the previous trading volume and contemporaneous return volatility and between previous return volatility and contemporaneous trading volume.

Keywords: Amman Stock Exchange, Volume, Return, Volatilty, Cointegration, Granger, VEC.